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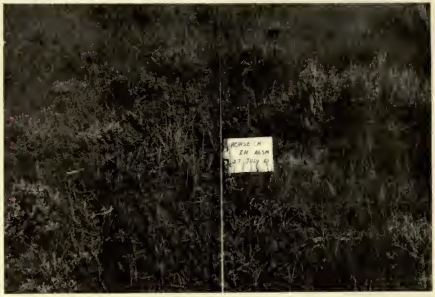

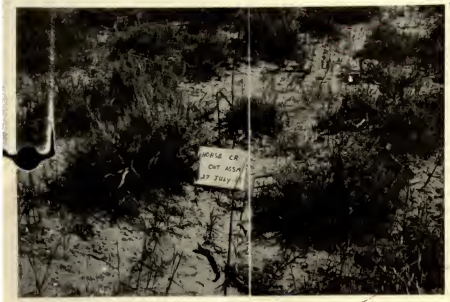

ANNUAL PROGRESS REPORT
1968

ARID LAND ECOLOGY RESEARCH

Wyoming Agricultural Experiment Station

April 1969

BUREAU OF LAND MANAGEMENT
1701 EAST E
CASPER, WY 82601

ARID LAND ECOLOGY RESEARCH [1]/
1968 ANNUAL PROGRESS REPORT

by

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Frontspiece

The photographs of the Horse Creek Exclosure, located a few miles north of Shell, Wyoming depict the vegetational response to 13 years of protection from grazing. Under the protection western wheatgrass has greatly increased in abundance and production while on the outside of the exclosure grass production remains minimal.

1/ Published with the approval of the Director, Wyoming Agricultural Experiment Station, as Scientific Report No. 178.

2/ Associate Professor of Range Management and Graduate Research Assistant, Range Management Section, University of Wyoming, Laramie, respectively.

S E C T I O N I

SOIL MOISTURE AND TEMPERATURE STUDIES 1968

Introduction

Studies to evaluate soil moisture and temperature characteristics as influenced by sagebrush control and livestock grazing were initiated in 1963. Soil moisture was determined by use of a neutron scattering meter. Permanent metal access tubes, 2" in diameter, were set into the ground to a depth of 5'. The neutron probe measures the amount of water in the soil through an area of about 4' in diameter. Soil temperatures were measured with thermistor probes placed at 8, 15, and 22" below the surface. Lead cables from the buried sensitive elements were connected to a meter for an instantaneous reading of temperature. Surface temperatures were read with a portable probe. At the Smilo and Granite Mountain Exclosures two access tubes were located in each of the following treatments at each study site: Inside Sagebrush Sprayed, Inside Sagebrush Non-sprayed, Outside Sagebrush Sprayed and Outside Sagebrush Non-sprayed. At the Cumberland #1 and Cumberland #4 Exclosures three access tubes were placed in each of the two treatments inside the exclosures: Sagebrush Sprayed and Sagebrush Non-sprayed.

1968 Results

Soil moisture, temperature and precipitation data were recorded on four dates at the Granite Mountain and Smilo Exclosures during 1968. These precipitation and soil moisture data are presented in Tables 1 and 2. Soil moisture levels on September 3, 1968 were considerably greater in 1968 than in 1967 because of the high frequency and amount of precipitation which occurred during the summer. Greatest increase in soil moisture was noted in the inside-spray treatment area at the Granite Mountain site and especially at the 6" and 12" depths on both sites.

At the Cumberland #1 and Cumberland #3 Exclosures soil moisture values did not vary significantly from the 1967 data. Their data are presented in Tables 3 and 4. A slight increase in precipitation during summer did cause a complementary increase in soil moisture levels especially at the 6" and 12" depths.

Soil temperature dates from the Granite Mountain and Smilo Exclosures are presented in Table 5. Temperatures at the April reading dates were low but had increased considerably by July. Readings in early September were lower than previous years, and reflected the higher summer precipitation. Interestingly, the temperatures, in October at the 1" and 8" depths were considerably higher than in 1967 and 1966. These could probably be correlated with the low precipitation during September and October and low soil moisture values at those depths.

Table 1. Granite Mountain Exclosure. Precipitation (in inches) and soil moisture readings (inches of moisture per 12" of soil) as affected by sagebrush control and grazing-1968 (each figure is an average of readings in two access tubes).

Outside Spray	Apr. 12	July 2	Sept. 3	Oct. 12	Mean
6"	3.58	2.12	2.34	1.95	2.49
12"	3.44	2.39	2.17	2.03	2.50
18"	2.96	2.57	2.08	2.03	2.41
24"	2.16	2.32	2.12	1.97	2.14
36"	2.27	2.35	2.25	2.29	2.29
48"	1.69	1.65	1.82	1.72	1.72
60"	1.75	1.77	1.79	1.78	1.77
Mean	2.55	2.17	2.08	1.97	2.19
Outside Non-spray					
6"	3.70	2.31	2.35	2.06	2.60
12"	3.58	2.62	2.48	2.19	2.71
18"	3.89	3.05	2.40	2.43	2.94
24"	3.40	2.89	2.33	2.27	2.72
36"	1.98	2.19	1.89	1.86	1.98
48"	1.81	1.67	1.85	1.67	1.75
60"	1.52	1.50	1.55	1.46	1.21
Mean	2.84	2.32	2.12	1.99	2.32
Inside Spray					
6"	3.97	2.13	2.35	2.37	2.70
12"	3.77	2.38	2.32	2.27	2.68
18"	3.69	2.83	2.31	2.25	2.77
24"	3.02	2.71	2.27	2.26	2.56
36"	2.03	2.53	2.20	2.13	1.97
48"	2.04	2.32	2.32	2.24	2.23
60"	1.83	2.06	2.01	1.92	1.96
Mean	2.91	2.42	2.25	2.20	2.45
Inside Non-spray					
6"	3.37	2.11	2.00	2.01	2.37
12"	3.17	2.09	1.67	1.70	2.16
18"	2.94	2.32	1.66	1.65	2.14
24"	2.44	2.38	1.69	1.67	2.04
36"	1.83	2.14	1.73	1.67	1.84
48"	1.69	1.88	2.08	1.79	1.86
60"	1.50	1.40	1.44	1.61	1.49
Mean	2.42	2.04	1.75	1.73	1.98
PPT	2.80	3.70	1.70	0.01	

Table 2. Smilo Exclosure. Precipitation (in inches) and soil moisture readings (inches of moisture per 12" of soil) as effected by sagebrush control and grazing-1968 (each figure is an average of readings in two access tubes).

Outside Spray	Apr. 12	July 2	Sept. 7	Oct. 13	Mean
6"	3.35	3.14	2.76	2.71	2.99
12"	2.05	2.12	2.03	1.99	2.05
18"	1.90	1.82	1.89	1.84	1.86
24"	1.85	1.80	1.83	1.85	1.83
36"	2.22	2.16	2.81	2.33	2.38
48"	1.65	1.40	1.56	1.41	1.50
60"	1.24	1.06	1.20	1.01	1.13
Mean	2.04	1.93	2.01	1.88	1.96
Outside Non-spray					
6"	2.79	2.35	1.99	2.19	2.33
12"	2.00	1.74	1.54	1.63	1.73
18"	1.62	1.44	1.39	1.47	1.48
24"	1.43	1.28	1.30	1.32	1.33
36"	1.48	1.47	1.51	1.49	1.49
48"	1.74	1.59	1.69	1.63	1.66
60"	1.79	1.74	1.70	1.75	1.74
Mean	1.83	1.66	1.59	1.64	1.68
Inside Spray					
6"	3.08	2.81	2.37	2.41	2.67
12"	1.93	1.83	1.66	1.85	1.82
18"	1.61	1.52	1.59	1.78	1.62
24"	1.57	1.49	1.54	1.66	1.56
36"	1.92	1.72	1.80	1.90	1.83
48"	2.50	2.36	2.44	2.50	2.45
60"	2.61	2.50	2.50	2.52	2.53
Mean	2.17	2.03	1.98	2.09	2.07
Inside Non-spray					
6"	2.91	2.48	2.12	2.16	2.42
12"	2.03	1.84	1.82	1.78	1.87
18"	1.86	1.91	1.91	1.93	1.90
24"	2.00	1.88	1.90	1.87	1.91
36"	1.84	1.53	1.79	1.80	1.74
48"	1.66	1.63	1.57	1.61	1.62
60"	1.38	1.34	1.43	1.42	1.39
Mean	1.95	1.80	1.79	1.79	1.83
PPT	2.73	2.68	3.72	0.19	

Table 3. Cumberland No. 1 Exclosure. Precipitation (in inches) and soil moisture readings (inches of moisture per 12" of soil) as effected by sagebrush control and grazing-1968 (each figure is an average of readings in three access tubes).

Inside Spray	Apr. 15	July 1	Sept. 2	Oct. 12	Mean
6"	3.40	1.59	1.93	1.89	2.20
12"	2.91	1.69	1.60	1.57	1.94
18"	1.85	1.75	1.63	1.62	1.71
24"	1.64	1.73	1.74	1.68	1.70
36"	1.83	1.91	1.88	1.92	1.88
48"	2.07	2.13	2.05	2.09	2.08
60"	2.10	2.18	2.24	2.21	2.18
Mean	2.26	1.85	1.86	1.85	1.95
Inside Non-Spray					
6"	3.45	1.58	1.86	1.94	2.21
12"	3.11	1.72	1.78	1.79	2.10
18"	2.47	1.98	1.74	1.79	1.99
24"	1.83	1.93	1.80	1.81	1.84
36"	1.88	1.95	1.85	1.86	1.88
48"	2.11	2.18	2.00	2.01	2.07
60"	2.03	2.11	2.06	1.99	2.05
Mean	2.41	1.92	1.87	1.88	2.02
PPT	3.61	2.23	2.02	0.54	

Table 4. Cumberland No. 3 Exclosure. Precipitation (in inches) and soil moisture readings (inches of moisture per 12" of soil) as effected by sagebrush control and grazing-1968 (each figure is an average of readings in three access tubes).

Inside Spray	Apr. 15	July 1	Sept. 2	Oct. 11	Mean
6"	3.72	1.81	2.24	2.23	2.50
12"	3.77	2.15	1.90	1.90	2.43
18"	3.82	2.36	1.89	1.90	2.49
24"	3.16	2.33	1.93	1.90	2.33
36"	2.21	2.07	2.03	2.05	2.09
48"	2.12	2.05	1.96	1.96	2.02
60"	2.11	2.14	2.03	2.00	2.07
Mean	2.99	2.13	2.00	1.99	2.28
Inside Non-spray					
6"	3.48	1.71	2.14	1.75	2.27
12"	3.54	2.08	1.83	1.76	2.30
18"	3.47	2.42	1.75	1.70	2.33
24"	2.64	2.33	1.69	1.67	2.08
36"	1.83	2.02	1.69	1.67	1.80
48"	1.83	1.96	1.75	1.59	1.78
60"	1.67	1.81	1.63	1.58	1.67
Mean	2.64	2.05	1.78	1.67	2.03
PPT	4.97	4.30	2.34	0.35	

Table 5. Soil and air temperatures (in degrees centigrade) from the Granite Mountain and Smilo Exclosures - 1968.

Granite Mountain Exclosure

Date	Sprayed					Non-sprayed				
	Air	1"	8"	15"	22"	Air	1"	8"	15"	22"
11 Apr. '68	0.2	6.3	0.7	-0.3	0.2	0.3	4.0	-0.2	0.2	0.3
2 July '68	22.1	27.5	13.8	13.4	12.7	22.1	30.2	14.4	14.4	13.3
3 Sept. '68	8.0	11.0	13.0	13.0	14.0	6.0	10.5	12.5	14.5	14.5
12 Oct. '68	21.7	21.6	8.5	8.1	9.1	22.3	23.1	8.2	8.6	9.3

Smilo Exclosure

11 Apr. '68	15.2	18.2	8.6	6.8	7.5	14.7	16.4	9.3	8.8	7.2
2 July '68	26.1	36.9	---	---	17.3	26.1	26.1	19.2	18.2	16.6
3 Sept. '68	Data not recorded									
12 Oct. '68	21.1	19.8	13.1	12.7	12.0	21.2	22.0	12.2	12.0	12.0

S E C T I O N I I

SOIL MOISTURE AND TEMPERATURE STUDIES ON MICROCLIMATIC STUDY SITES IN THE BIG HORN BASIN 1967 and 1968

Introduction

Various studies have been made of salt desert areas. Of special interest have been the distinct boundaries between plant communities of almost pure stands of single species. Several workers have shown that certain soil properties are related to these distinct changes in plant communities but no one characteristic in itself is sufficient to cause this change. Each of these studies have hypothesized that the cause is apparently due to plant-soil moisture relationships since these recorded changes involve texture, salts, soil depth, and other soil factors associated with soil moisture. Therefore, a University of Wyoming-Bureau of Land Management cooperative study was initiated in the Big Horn Basin of north central Wyoming in June, 1965, to determine soil moisture-soil temperature regimes of several salt desert plant communities.

Location of Study Sites

The general study area is located on state and federal land in the Big Horn Basin. A map of study site locations was presented in the 1968 Arid Land Ecology Report. Specifically, Study Area I is east of Manderson and contains two study communities; a Nuttall's saltbush (*Atriplex nuttallii* S. Wats.) community and a big sagebrush (*Artemisia tridentata* Nutt. subsp. *vaseyana* (Rydb.) Beetle) community. Area II is east of Highway 20 between Worland and Manderson and contains three study communities; a saltbush community, a big sagebrush community, and a bud sagebrush (*Artemisia spinescens* (D. C. Eat.)) community. Areas III and IV are located on the 15 Mile Creek drainage northwest of Worland. Area III is adjacent to the experimental steer pastures and has two study communities, a saltbush community and a birdfoot sagebrush (*Artemisia petatifida* Nutt.) community. Area IV has two study communities, a saltbush community and a spiny hopsage (*Grayia spinosa* (Hook) Msq.) community. Area V is northeast of Area II and contains a slatbush community and a winterfat (*Eurotia lanata* (Pursh) Msq.) community. This last mentioned area was installed in June, 1966, the others during June, 1965.

Procedures

Three steel tubes, two inches in diameter, were installed to 5 feet at varying intervals within each plant community for soil moisture determinations. These determinations are made by a neutron scattering instrument at 6, 12, 18, 24, 36, 48 and 60 inch depths within each tube. Recordings were made monthly during the winter and twice monthly during the growing season of 1967 (Table 1). During 1968, data were recorded four times in coordination with rain gauge readings. These recordings were converted to inches of water per one foot of soil by use of the Philco 1600 computer.

Soil temperature measurements were read each time soil moisture recordings are made. Soil thermistors and a temperature sensing probe were used to record temperatures at 1, 8, 15 and 22 inch depths as recorded from a Tele-thermometer (Table 2).

Precipitation was determined by use of can type gauges. Recordings are made each time soil moisture and soil temperature determinations are measured. These data are included in Table 1.

1967 and 1968 Results

Analysis of the data is not being attempted in this report. Mr. Robert Steger is to prepare a detailed report of the data in terms of causative factors influential to the variation of shrub types in the area.

Subsequent to the frequent summer rain showers during 1968 soil moisture values at the surface levels were generally higher than during the preceding years of study. In some cases total moisture, through the five foot depths of measure, was somewhat greater than previously recorded, but these differences appeared to be minimal. Lower precipitation values during the 1968 winter and spring periods, as compared to 1967, may well have been more influential to the overall soil moisture regime than the summer rainfall, much of which does not effectively enter the soil because of runoff and evaporation. Late summer temperatures during 1968, at the 15" depth, were 4 to 5 degrees centigrade cooler than in 1966. This probably occurred as a result of the frequent rain showers, which would tend to cool the soil, and a slight increase in soil moisture which would have the same effect.

Table 1. Soil moisture (inches of moisture per 12" of soil) summarized over three tubes in each community and precipitation (in inches) recorded at the microclimate study sites of various shrub types in the Big Horn Basin for the years 1967 and 1968.

	Area I Manderson 0989 - ATNU											1968 Data by Date and Month			
	1967 Data by Date and Month														
Depth	128	225	323	415	515	608	620	715	807	901	1014	412	703	906	1013
6"	1.32	0.52	1.87	1.70	1.81	1.75	1.84	1.87	1.56	1.47	1.71	2.12	1.61	1.76	1.61
12"	1.17	0.22	1.22	1.20	1.27	1.28	1.28	1.51	1.43	1.28	1.36	1.56	1.31	1.41	1.35
18"	1.35	0.22	1.31	1.25	1.32	1.32	1.30	1.34	1.34	1.35	1.36	1.38	1.33	1.42	1.36
24"	1.40	0.22	1.37	1.31	1.39	1.37	1.37	1.38	1.38	1.40	1.41	1.36	1.30	1.38	1.34
36"	1.43	0.22	1.37	1.30	1.40	1.40	1.38	1.34	1.38	1.38	1.39	1.36	1.35	1.43	1.37
48"	1.55	0.22	1.51	1.45	1.53	1.54	1.55	1.54	1.55	1.54	1.55	1.53	1.49	1.55	1.55
60"	1.71	0.22	1.64	1.65	1.72	1.73	1.73	1.73	1.74	1.69	1.72	1.69	1.62	1.67	1.63
Mean	1.42	0.26	1.47	1.41	1.49	1.48	1.49	1.53	1.48	1.44	1.50	1.57	1.43	1.52	1.46
Ppt.				1.80*			2.18		2.83	0.02	1.55	1.35	3.48	3.20	0.32

*Encompasses period from 22 October 1966 to 15 April 1967.

	Area I Manderson 0990 - ARTR														
6"	2.27	0.42	2.14	1.94	2.36	1.71	1.66	1.47	1.28	1.30	1.36	1.93	1.59	1.67	1.38
12"	1.29	0.15	1.55	1.70	2.26	1.77	1.62	1.37	1.16	1.16	1.20	1.76	1.47	1.35	1.19
18"	1.18	0.15	1.19	1.29	2.38	1.98	1.79	1.53	1.31	1.23	1.26	1.58	1.39	1.38	1.22
24"	1.25	0.15	1.19	1.21	2.12	1.92	1.79	1.55	1.36	1.31	1.32	1.38	1.32	1.39	1.22
36"	1.24	0.15	1.21	1.17	1.28	1.32	1.36	1.30	1.29	1.28	1.32	1.34	1.25	1.44	1.27
48"	1.36	0.15	1.32	1.32	1.39	1.38	1.42	1.35	1.39	1.39	1.40	1.41	1.35	1.45	1.34
60"	1.45	0.15	1.40	1.40	1.44	1.49	1.44	1.47	1.49	1.44	1.48	1.46	1.43	1.54	1.43
Mean	1.44	0.18	1.43	1.43	1.89	1.65	1.58	1.44	1.33	1.30	1.34	1.55	1.40	1.46	1.29
Ppt.				1.80*			2.18		2.83	0.02	1.55	1.35	3.48	3.20	0.32

*Encompasses period from 22 October 1966 to 15 April 1967.

Table 1. Continued

Area II Worland 2091 - ATNU

Depth	1967 Data by Date and Month											1968 Data by Date and Month			
	128	225	323	415	515	608	620	715	807	901	1014	412	703	906	1013
6"	1.77	0.52	2.04	1.98	2.74	2.34	2.12	1.60	1.54	1.66	1.75	2.02	2.31	2.11	2.10
12"	1.59	0.22	1.62	1.62	2.35	2.21	2.06	1.69	1.61	1.61	1.64	1.83	1.88	1.66	1.75
18"	1.70	0.22	1.67	1.62	1.80	1.80	1.80	1.68	1.69	1.68	1.68	1.71	1.68	1.66	1.75
24"	1.74	0.22	1.68	1.67	1.68	1.68	1.74	1.68	1.72	1.72	1.75	1.72	1.68	1.74	1.80
36"	1.83	0.22	1.75	1.71	1.72	1.76	1.74	1.71	1.75	1.77	1.78	1.79	1.70	1.69	1.75
48"	1.77	0.22	1.72	1.67	1.72	1.73	1.74	1.67	1.72	1.75	1.72	1.74	1.69	1.67	1.74
60"	1.76	0.22	1.71	1.75	1.73	1.80	1.87	1.80	1.84	1.80	1.80	1.80	1.77	1.75	1.77
Mean	1.74	0.26	1.74	1.72	1.96	1.90	1.87	1.69	1.70	1.71	1.73	1.80	1.82	1.75	1.81
Ppt.				1.38*			3.50		1.81	0.02	1.45	1.25	3.51	3.35	0.17

*Encompasses period from 22 October 1966 to 15 April 1967.

Area II Worland 2092 - ARSP

6"	1.60	0.52	1.98	1.76	2.23	1.70	1.67	1.54	1.42	1.35	1.74	1.95	1.80	1.95	2.05
12"	1.47	0.22	1.55	1.58	2.27	1.85	1.80	1.67	1.56	1.53	1.59	1.72	1.43	1.36	1.55
18"	1.44	0.22	1.40	1.39	1.83	1.69	1.65	1.55	1.50	1.51	1.52	1.53	1.39	1.30	1.47
24"	1.43	0.22	1.38	1.34	1.63	1.58	1.57	1.47	1.46	1.44	1.43	1.45	1.40	1.34	1.50
36"	1.63	0.22	1.59	1.54	1.63	1.63	1.65	1.62	1.64	1.65	1.65	1.64	1.68	1.54	1.79
48"	1.90	0.22	1.84	1.82	1.86	1.92	1.92	1.88	1.89	1.86	1.91	1.92	1.91	1.69	1.87
60"	2.17	0.22	2.06	2.06	2.08	2.15	2.15	2.12	2.15	2.11	1.45	2.14	2.07	1.95	2.10
Mean	1.66	0.26	1.69	1.64	1.93	1.79	1.77	1.69	1.66	1.64	1.61	1.76	1.67	1.59	1.76
Ppt.				1.38*			3.50		1.81	0.02	1.45	1.25	3.51	3.35	0.17

*Encompasses period from 22 October 1966 to 15 April 1967.

Area II Worland 2093 - ARTR

6"	1.65	0.52	1.93	1.79	2.11	1.63	1.59	1.30	1.24	1.10	1.60	1.79	1.39	1.94	1.46
12"	1.13	0.22	1.59	1.48	2.03	1.54	1.42	1.21	1.17	1.13	1.35	1.46	1.29	1.37	1.33
18"	1.21	0.22	1.30	1.23	1.94	1.64	1.60	1.33	1.29	1.25	1.31	1.40	1.29	1.35	1.33
24"	1.29	0.22	1.33	1.24	1.43	1.50	1.47	1.35	1.31	1.32	1.34	1.39	1.27	1.29	1.28
36"	1.26	0.22	1.31	1.21	1.26	1.27	1.29	1.26	1.27	1.25	1.27	1.28	1.18	1.27	1.22
48"	1.25	0.22	1.29	1.21	1.25	1.27	1.26	1.24	1.27	1.26	1.25	1.31	1.22	1.24	1.24
60"	1.24	0.22	1.30	1.21	1.25	1.25	1.28	1.31	1.30	1.27	1.27	1.28	1.26	1.25	1.26
Mean	1.29	0.26	1.44	1.34	1.61	1.44	1.44	1.28	1.26	1.23	1.34	1.41	1.27	1.39	1.30
Ppt.				1.38*			3.50		1.81	0.02	1.45	1.25	3.51	3.35	0.17

*Encompasses period from 22 October 1966 to 15 April 1967.

Table 1. Continued

Area III Steer Pastures 2094 - ARPE

Depth	1967 Data by Date and Month											1968 Data by Date and Month			
	127	225	324	415	514	607	619	715	808	901	1014	412	703	907	1012
6"	1.68	1.80	2.20	2.08	2.08	1.64	1.95	1.56	1.46	1.30	1.92	1.87	1.71	1.98	1.63
12"	1.56	1.47	1.77	1.76	1.86	1.69	1.72	1.66	1.61	1.54	1.70	1.68	1.66	1.73	1.60
18"	1.76	1.56	1.74	1.83	1.83	1.82	1.78	1.78	1.78	1.77	1.82	1.79	1.76	1.89	1.72
24"	1.84	1.65	1.77	1.79	1.77	1.79	1.78	1.73	1.77	1.76	1.80	1.77	1.72	1.83	1.64
36"	1.77	1.61	1.70	1.78	1.72	1.74	1.73	1.70	1.76	1.75	1.74	1.76	1.75	1.82	1.81
48"	1.78	1.61	1.71	1.79	1.74	1.74	1.77	1.74	1.80	1.78	1.78	1.76	1.74	1.96	1.77
60"	1.87	1.70	1.81	1.87	1.86	1.89	1.88	1.88	1.94	1.84	1.90	1.92	2.01	2.29	2.04
Mean	1.75	1.63	1.81	1.84	1.84	1.76	1.80	1.72	1.73	1.68	1.81	1.79	1.76	1.93	1.74
Ppt.				1.38*			3.50		1.81	0.01	2.56	1.05	2.61	3.16	0.03

*Encompasses period from 22 October 1966 to 15 April 1967.

Area III Steer Pastures 2095 - ATNU

6"	1.71	1.75	1.86	1.84	1.84	1.88	2.35	1.84	1.61	1.43	1.83	1.80	1.79	2.22	2.16
12"	1.81	1.62	1.79	1.80	1.82	1.87	2.28	1.97	1.94	1.85	1.92	1.81	1.80	1.86	1.79
18"	1.86	1.70	1.78	1.82	1.82	1.84	2.03	1.90	1.89	1.92	1.88	1.81	1.66	1.72	1.68
24"	1.68	1.52	1.66	1.71	1.70	1.68	1.67	1.65	1.69	1.69	1.69	1.67	1.67	1.82	1.83
36"	1.98	1.82	2.00	1.98	1.99	1.99	2.03	1.94	1.99	2.01	2.06	2.00	2.00	2.08	2.06
48"	2.16	1.96	2.16	2.14	2.13	2.16	2.10	2.10	2.14	2.16	2.17	2.14	2.07	2.18	2.10
60"	2.12	2.10	2.12	2.12	2.13	2.14	2.11	2.14	2.17	2.14	2.18	2.11	2.08	2.16	2.09
Mean	1.90	1.78	1.91	1.92	1.92	1.94	2.08	1.93	1.92	1.89	1.96	1.91	1.87	2.00	1.96
Ppt.				1.38*			3.50		1.81	0.01	2.56	1.05	2.61	3.16	0.03

*Encompasses period from 22 October 1966 to 15 April 1967.

Table 1. Continued

	Area IV Burnt Wagon 2096 - ATNU											1968 Data by Date and Month			
	1967 Data by Date and Month														
Depth	127	225	324	415	514	607	619	715	808	901	1014	412	703	903	1012
6"	1.43	1.65	2.54	2.43	2.35	2.16	2.26	1.77	1.67	1.68	1.93	1.73	1.91	2.09	2.18
12"	1.52	1.34	1.87	1.86	1.90	1.85	2.15	1.83	1.77	1.78	1.77	1.74	1.82	1.90	1.91
18"	1.86	1.63	1.89	1.85	1.93	1.90	2.07	1.90	1.92	1.95	1.95	1.89	1.78	1.83	1.90
24"	1.87	1.76	1.84	1.84	1.87	1.86	1.87	1.82	1.84	1.88	1.91	1.84	1.82	1.85	1.94
36"	1.91	1.80	1.90	1.90	1.91	1.92	1.93	1.86	1.92	1.90	1.96	1.75	1.84	1.82	1.93
48"	2.00	1.83	1.99	1.99	2.05	2.02	2.00	1.96	2.02	2.01	2.07	1.98	1.95	1.89	2.03
60"	2.17	1.98	2.14	2.10	2.15	2.12	2.10	2.08	2.13	2.14	2.20	2.13	2.05	2.03	2.13
Mean	1.82	1.71	2.03	2.00	2.02	1.97	2.05	1.89	1.89	1.91	1.97	1.87	1.88	1.92	2.00
Ppt.				1.43*			4.20		0.34	0.01	1.96	1.29	3.74	3.74	0.39

*Encompasses period from 22 October 1966 to 15 April 1967.

	Area IV Burnt Wagon 2097 - GRSP														
6"	1.45	1.20	1.90	1.70	1.87	1.33	1.55	1.05	0.99	0.99	1.38	1.77	1.18	2.10	1.74
12"	1.16	0.74	1.85	1.79	1.95	1.31	1.47	1.01	0.98	0.95	1.47	1.74	1.18	1.50	1.45
18"	1.13	0.78	1.68	1.59	2.00	1.45	1.35	1.10	1.08	1.06	1.26	1.93	1.15	1.16	1.16
24"	1.09	0.78	1.41	1.38	1.60	1.34	1.21	1.05	1.04	1.05	1.08	1.49	1.04	1.04	1.06
36"	1.05	0.72	1.09	1.16	1.34	1.18	1.07	1.00	1.02	1.01	1.03	1.23	1.01	1.05	1.02
48"	1.04	0.73	1.07	1.03	1.15	1.17	1.08	1.03	1.04	1.04	1.04	1.07	1.00	1.04	1.05
60"	1.23	0.88	1.35	1.31	1.33	1.36	1.38	1.30	1.39	1.35	1.33	1.33	1.30	1.24	1.20
Mean	1.16	0.83	1.48	1.42	1.61	1.30	1.30	1.08	1.08	1.06	1.23	1.51	1.12	1.31	1.24
Ppt.				1.43*			4.20		0.34	0.01	1.96	1.29	3.74	3.74	0.39

*Encompasses period from 22 October 1966 to 15 April 1967.

Table 1. Continued

	Area V Shell 0998 - ATNU														
	1967 Data by Date and Month											1968 Data by Date and Month			
Depth	127	225	323	415	514	607	620	715	807	901	1014	412	703	906	1013
6"	1.85	2.31	2.56	2.46	2.48	2.12	1.78	1.52	1.37	1.37	1.73	2.37	1.92	1.77	1.63
12"	1.21	1.28	2.06	2.08	2.24	1.88	1.65	1.29	1.20	1.18	1.28	1.86	1.73	1.19	1.27
18"	1.16	1.04	1.44	1.44	1.65	1.55	1.50	1.30	1.21	1.21	1.18	1.37	1.36	1.22	1.28
24"	1.26	1.12	1.27	1.25	1.30	1.33	1.33	1.31	1.31	1.29	1.29	1.28	1.27	1.24	1.35
36"	1.44	1.28	1.39	1.37	1.43	1.38	1.42	1.40	1.41	1.43	1.42	1.42	1.36	1.29	1.37
48"	1.45	1.31	1.40	1.37	1.42	1.40	1.42	1.43	1.42	1.43	1.41	1.44	1.33	1.34	1.39
60"	1.44	1.36	1.44	1.42	1.48	1.48	1.51	1.50	1.50	1.48	1.48	1.48	1.43	1.32	1.43
Mean	1.40	1.38	1.65	1.63	1.71	1.59	1.52	1.39	1.35	1.34	1.40	1.60	1.49	1.34	1.39
Ppt.				1.48*			3.52		2.06	0.02	1.67	1.50	3.75	3.08	0.15

*Encompasses period from 22 October 1966 to 15 April 1967.

	Area V Shell 0999 - EULA														
6"	1.52	1.86	2.32	2.23	2.34	2.14	2.07	1.64	1.41	1.41	1.88	2.23	1.75	1.78	1.66
12"	1.21	1.14	1.72	1.81	2.01	1.78	1.71	1.42	1.20	1.21	1.38	1.99	1.61	1.33	1.27
18"	1.26	1.10	1.40	1.45	1.53	1.55	1.34	1.45	1.33	1.34	1.32	1.51	1.48	1.72	1.35
24"	1.41	1.25	1.36	1.37	1.40	1.42	1.45	1.47	1.43	1.43	1.44	1.45	1.38	1.44	1.40
36"	1.50	1.33	1.43	1.42	1.47	1.44	1.48	1.44	1.46	1.48	1.48	1.48	1.44	1.45	1.44
48"	1.63	1.42	1.55	1.53	1.59	1.56	1.58	1.58	1.60	1.57	1.62	1.57	1.47	1.51	1.51
60"	1.54	1.38	1.43	1.41	1.46	1.46	1.52	1.51	1.44	1.46	1.48	1.48	1.43	1.42	1.45
Mean	1.44	1.35	1.60	1.60	1.68	1.62	1.59	1.50	1.41	1.41	1.51	1.67	1.51	1.52	1.44
Ppt.				1.48*			3.52		2.06	0.02	1.67	1.50	3.75	3.08	0.15

*Encompasses period from 22 October 1966 to 15 April 1967

Table 2. Soil and air temperatures (in degrees centigrade) summarized by communities at the microclimate study site of various shrub types in the Big Horn Basin at four dates in 1968.

		Air	1"	8"	15"	22"
		April 11, 1968 Temperature Data				
Area I Manderson	0989-ATNU	7.4	9.3	10.1	9.6	8.2
Area I Manderson	0990-ARTR	8.4	8.8	9.4	---	8.5
Area II Worland	2091-ATNU	11.0	15.8	9.7	8.8	8.4
Area II Worland	2092-ARSP	11.3	18.2	9.3	9.0	8.6
Area II Worland	2093-ARTR	12.5	13.5	9.7	9.5	8.5
Area III Steer Past.	2094-ARPE	26.7	23.1	7.8	6.4	---
Area III Steer Past.	2095-ATNU	26.6	24.2	8.4	6.9	6.5
Area IV Burnt Wagon	2096-ATNU	21.0	17.1	9.2	8.3	7.2
Area IV Burnt Wagon	2097-GRSP	24.2	13.2	8.2	7.4	7.3
Area V Shell	0998-ATNU	25.5	22.4	8.2	7.3	6.3
Area V Shell	0999-EULA	23.1	21.8	9.9	7.8	6.2
		July 3, 1968 Temperature Data				
Area I Manderson	0989-ATNU	34.9	45.9	22.3	19.4	18.3
Area I Manderson	0990-ARTR	35.3	47.9	20.2	18.3	18.1
Area II Worland	2091-ATNU	28.1	36.8	21.9	18.9	18.6
Area II Worland	2092-ARSP	27.9	38.9	23.1	19.5	18.5
Area II Worland	2093-ARTR	29.0	36.1	22.9	19.2	18.3
Area III Steer Past.	2094-ARPE	19.6	24.6	17.1	16.8	15.8
Area III Steer Past.	2095-ATNU	20.1	20.4	18.0	17.7	17.1
Area IV Burnt Wagon	2096-ATNU	17.0	15.9	19.5	18.9	17.0
Area IV Burnt Wagon	2097-GRSP	18.5	16.1	18.5	---	17.9
Area V Shell	0998-ATNU	24.7	37.1	19.1	19.1	18.4
Area V Shell	0999-EULA	27.1	35.9	20.2	19.2	17.3
		Sept. 5, 1968 Temperature Data				
Area I Manderson	0989-ATNU	17.0	16.0	12.5	15.0	15.5
Area I Manderson	0990-ARTR	18.0	18.0	14.0	15.0	16.0
Area II Worland	2091-ATNU	25.5	25.0	17.5	14.5	17.0
Area II Worland	2092-ARSP	26.0	25.0	18.5	15.5	15.5
Area II Worland	2093-ARTR	28.0	26.0	19.0	16.5	18.0
Area III Steer Past.	2094-ARPE	15.5	14.0	16.0	16.5	16.0
Area III Steer Past.	2095-ATNU	---	---	---	---	---
Area IV Burnt Wagon	2096-ATNU	16.3	22.1	15.2	15.8	16.7
Area IV Burnt Wagon	2097-GRSP	14.1	19.6	14.2	15.8	16.5
Area V Shell	0998-ATNU	26.0	25.0	12.5	15.0	16.0
Area V Shell	0999-EULA	28.5	26.5	14.5	15.0	16.0
		Oct. 12, 1968 Temperature Data				
Area I Manderson	0989-ATNU	17.9	10.9	11.2	12.2	11.5
Area I Manderson	0990-ARTR	16.5	13.0	11.4	12.5	12.1
Area II Worland	2091-ATNU	21.2	16.5	12.6	10.9	12.2
Area II Worland	2092-ARSP	23.3	17.2	10.2	11.8	12.2
Area II Worland	2093-ARTR	23.9	23.8	10.9	12.4	13.2
Area III Steer Past.	2094-ARPE	18.5	14.3	11.7	11.1	---
Area III Steer Past.	2095-ATNU	18.2	16.7	13.2	12.2	11.5
Area IV Burnt Wagon	2096-ATNU	19.3	16.5	10.7	10.5	11.3
Area IV Burnt Wagon	2097-GRSP	19.0	15.5	12.9	12.9	11.6
Area V Shell	0998-ATNU	14.2	11.1	11.2	12.8	12.4
Area V Shell	0999-EULA	14.8	9.4	12.3	12.7	11.9

S E C T I O N I I I

PRECIPITATION PATTERN STUDY, 1967

Introduction

During 1960 over 70 gauges were installed at 6 to 12 mile intervals throughout the Big Horn and Wind River Basins. Since that time approximately 20 gauges in the Big Horn Basin have been discontinued and some 60 gauges have been installed at various exclosures and study sites throughout western Wyoming. These gauges are simple cans, 12" in height and approximately 2.75" in diameter. This diameter allows reading of precipitation by merely pouring the water into a 100 ml cylinder, and converting ml readings to inches of rainfall. One hundred ml is equal to 1" of precipitation. The gauges are read on the same four dates each year - April 15, July 1, September 1, and October 15. Personnel of the Worland, Lander, Rawlins, Casper and Rock Springs Districts of the Bureau of Land Management cooperate with the University in reading the instruments. Some of the gauges are read by personnel of the Soil Conservation Service and the Wyoming Game and Fish Commission.

The weather bureau and the U. S. Geological Survey precipitation data are used to provide additional information from independent locations. This cooperative effort provides an effective network for future evaluation of precipitation patterns. A map of precipitation gauge locations was presented in the 1963 report.

1968 Results

Precipitation data for 1968 from the University gauges are presented in Table 1; those from the U. S. weather bureau stations are presented in Table 2. Precipitation during the winter period October 15, 1967 to April 15, 1968 was somewhat greater, in general, than during the previous year with values of approximately one to three inches in the low elevation arid regions and values ranging from three to five inches at the higher elevations.

Spring precipitation from April 15 to June 30 was less than the previous year also with most areas receiving from three to four inches. Generally cool temperatures associated with the lesser amount of precipitation proved to be inhibitory to annual forbs and grasses, as well as the perennials.

Summer precipitation during July and August was much greater than normal and also occurred with much greater frequency than usual resulting in late summer germination and growth of annuals. Perennial grasses did not appear to respond to the summer rains as was expected.

Fall precipitation, from September 1 to October 15 was somewhat less than usual with most areas receiving less than one inch. Some regrowth occurred but in general was minimal. An unusual hail storm in early September south of Shoshoni resulted in almost complete degradation of the herbaceous standing grass crop. Observations at the site a few days later indicated a very marked and rapid regrowth of Sandburg bluegrass and needleandthread. Western wheatgrass did not appear to respond as much.

Table 1. Precipitation data for 1968 from University of Wyoming gauges for the periods; October 15–April 15 (winter), April 15–July 1 (spring), July 1–September 1 (summer) and September 1–October 15 (fall).

Rain Gauge Number	County	Rain Gauge Name	Precipitation Periods				1968 Total	Long Term Average	No. of Years
			Winter	Spring	Summer	Fall			
123	Big Horn	Big Flat Exc.	1.02	3.19	2.74	0.95	7.90	7.90	1
24		Halogeton Pastures	0.95	3.09	1.43	0.61	6.08	5.28	9
12		Horse Creek	3.34	7.84	5.32	1.68	18.18	12.07	8
113		Horse Haven Exc.	1.35	3.48	3.20	0.32	8.35	8.36	2
21		Kane Deer Exc.	4.32	6.45	3.70	1.45	15.92	12.30	4
149		Kane Game Range Exc.	4.81	6.80	3.74	1.75	17.10	17.10	1
116		Kane Seed Exc.	1.32	3.40	1.99	1.15	7.86	7.86	1
148		Medicine Lodge Game Range	5.27	7.06	4.32	1.33	17.98	17.98	1
23		Sheep Springs	3.81	8.25	3.85	2.42	18.33	14.48	8
112		Shell Study Area	1.50	3.75	3.08	0.15	8.48	8.61	2
27	Carbon	Little Robber #5	4.24	3.61	2.70	1.32	11.87	9.89	7
127		Oppenheimer (RG #4)	3.35	2.78	1.44	0.72	8.29	8.29	1
128		Oppenheimer Exc.#1 (RG #5)	3.66	2.99	1.73	0.79	9.12	9.12	1
129		Oppenheimer-C (RG #6)	2.91	2.32	1.51	0.69	7.43	7.43	1
124		Poison Butte Exc.#1 (RG #1)	4.32	3.15	2.55	0.67	10.69	10.69	1
125		Poison Butte Exc.#2 (RG #2)	5.41	3.30	1.58	0.79	11.08	11.08	1
126		Poison Butte Exc.#2 (RG #3)	3.59	2.78	1.42	0.71	8.50	8.50	1
130		Powder Rim C Exc.#1 (RG #7)	2.84	2.52	0.87	0.81	7.04	7.04	1
26		Red Wash #1	3.86	2.85	1.29	0.76	8.76	8.74	7
25		Red Wash #3	3.46	1.93	1.56	0.60	7.55	8.99	7
52	Fremont	Alkali Flats	2.39	6.63	2.73	0.23	11.93	8.92	8
5		Ant Plot Exc. (Lander)	3.76	5.44	1.95	0.34	11.49	8.62	8
157		Bar X	----	----	Est.[1]	1.25	----	----	-
89		Birdseye Ranch	----	----	4.36	0.75	----	8.32	5
10		Boysen Resevoir Exc.	0.97	2.28	2.30	0.38	5.93	4.90	9
85		Bridger Creek	1.80	4.57	4.28	1.49	12.14	11.84	6
49		Canyon Creek	2.69	6.42	1.74	1.10	11.95	8.75	7
59		Carter Divide Exc.	2.91	5.90	1.77	0.21	10.79	8.11	8
88		Comet Mine	2.18	3.50	4.00	1.35	11.03	10.98	6
60		Dishpan Butte #1 Exc.	4.18	3.00	1.52	0.34	9.04	10.38	7
61		Dishpan Butte #2 Exc.	3.18	3.03	1.09	0.51	7.81	9.16	8
86		Dry Creek	1.81	4.55	3.35	0.52	10.23	7.54	8
58		Empty Cartridge	2.55	4.57	1.60	0.40	9.12	8.13	6
55		Fraser Seed Plot	2.35	4.07	1.57	0.54	8.53	8.56	6

Table 1. Continued

Rain Gauge Number	County	Rain Gauge Name	Precipitation Periods				1968 Total	Long Term Average	No. of Years
			Winter	Spring	Summer	Fall			
48	Fremont	Fuller Seed Plot	3.72	4.73	1.86	0.71	11.02	8.69	8
46		Gibbs Butte	1.58	5.19	2.31	0.48	9.56	7.42	8
6		Granite Mountain	2.80	3.70	1.70	0.01	8.21	8.73	5
62		Hall Creek Divide Exc.	5.30	4.11	1.58	0.24	11.23	11.46	8
87		Hoodoo Creek	0.90	3.20	2.45	0.30	6.85	6.22	8
64		Hudson	3.80	3.57	0.90	0.25	8.52	8.82	8
68		Johnson	1.47	4.81	3.52	1.26	11.06	8.33	6
63		Little Popo Agie	4.30	5.20	1.25	0.40	11.15	11.17	8
56		Logan #1 Exc.	3.34	5.17	1.66	0.48	10.65	8.54	8
57		Logan #2 Exc.	3.08	5.05	1.84	0.46	10.43	8.54	8
16		Lower Govt. Draw #2	4.85	4.00	0.97	0.21	10.03	10.49	8
81		Mack Ranch	1.15	5.87	3.76	N.R.	----	7.74	6
67		Madden	9.50	7.20	4.15	0.51	21.36	11.48	7
14		McGraw	3.02	3.30	1.10	0.41	7.83	9.24	8
47		Muskrat Creek	1.65	3.67	1.71	0.75	7.78	7.06	7
50		Muskrat #5 Exc.	3.93	4.19	1.82	0.34	10.28	8.40	8
51		Poison Creek	1.56	4.48	2.22	0.30	8.56	8.20	6
80		Poison Draw	1.34	5.49	3.25	1.03	11.11	7.97	8
65		Sand Draw	2.92	4.35	1.45	0.12	8.84	8.39	7
11		Sweetwater	4.93	N.R.	N.R.	5.61[2]	10.54	7.16	5
9		Upper Govt. Draw	3.95	3.35	1.00	0.20	8.50	8.30	8
117	Hot Springs	Big Bend Exc.	3.04	4.32	2.90	0.80	11.06	11.06	1
76		Cochran Exc.	3.31	4.66	2.77	0.70	11.44	10.67	8
77		Kirby Creek Exc.	3.28	4.25	2.36	0.51	8.04	9.10	6
111		Lower Enos Creek	2.47	5.12	3.07	0.96	11.62	11.62	1
22		LU Juniper Study	4.55	8.49	4.74	1.10	18.88	15.93	3
75		Sand Gulch Exc.	2.69	4.61	2.54	0.68	10.52	9.45	7
32	Lincoln	Cumberland #2	N.R.	8.70[3]	2.10	1.26	12.06	9.18	5
33		Cumberland #3	4.97	4.30	2.34	0.35	11.96	10.76	5
35		Elk Mountain Pit	N.R.	8.00[4]	1.50	0.91	10.41	8.18	4
143	Natrona	Arminto Exc.	2.34	N.R.	9.30[5]	0.70	12.34	12.09	2
109		Bolton Creek Exc.	2.78	----	----	0.22	----	----	-
141		Donlin Exc.	1.79	N.R.	7.45[6]	0.80	10.04	10.04	1
110		E K Exc.	2.34	N.R.	9.30[7]	0.70	12.34	12.09	2
142		Merino Exc.	4.19	N.R.	5.97[8]	1.30	11.46	11.46	1
108		Mud Springs Exc.	4.75	N.R.	5.49[9]	0.44	10.68	10.68	1
107		Owl Draw Exc.	3.59	N.R.	4.86[10]	0.64	9.09	9.35	2

Table 1. Continued

Rain Gauge Number	County	Rain Gauge Name	Precipitation Periods				1968 Total	Long Term Average	No. of Years
			Winter	Spring	Summer	Fall			
144	Natrona	Poison Spider Exc.	3.08	N.R.	3.70[11]	0.75	7.53	7.53	1
106		Stinking Creek	3.53	N.R.	4.30[12]	0.22	8.05	9.83	2
147	Park	Big Sage	----	Est.[13]	3.15	0.36	----	----	-
146		Big Sky	----	Est.[14]	3.70	0.35	----	----	-
100		Buffalo Basin Exc.	2.48	4.62	4.88	1.37	13.35	13.16	2
145		Hill Top Springs	Est.[15]	4.20	3.37	0.44	----	----	-
20	Sweetwater	Black Mountain	3.39	2.81	1.81	0.65	8.66	7.29	7
30		Boars Tusk	2.84	2.96	1.60	0.63	8.03	7.56	8
18		Cedar Mountain Exc.	N.R.	6.24[16]	1.85	0.40	8.49	8.36	7
102		Chandler Simpson Well	2.00	1.67	1.40	0.70	5.27	5.27	1
103		Daley Hay Corral	2.00	1.81	1.92	0.43	6.16	6.76	2
2		Farson	3.64	2.43	2.15	0.49	8.71	6.50	7
95		Farson Guzzler #1	2.82	2.56	1.97	0.60	7.95	9.33	4
96		Farson Guzzler #2	3.75	2.56	1.18	0.62	8.11	8.65	4
97		Farson Guzzler #3	3.12	2.27	1.68	0.82	7.89	7.18	4
98		Farson Guzzler #4	2.85	2.65	2.53	0.63	8.66	7.68	4
99		Farson Guzzler #5	4.16	2.09	1.76	0.57	8.58	7.26	4
122		Firehole Guzzler #10	4.65	3.31	2.49[17]	1.05	11.50	11.50	1
151		Firehole Guzzler #11	----	----	Est.[17]	0.76	----	----	-
152		Firehole Guzzler #12	----	----	Est.[17]	1.16	----	----	-
153		Firehole Guzzler #13	----	----	Est.[17]	0.87	----	----	-
104		J. O. Headquarters	2.23	2.03	2.62	0.68	7.56	6.80	3
105		Len Hay Corrol	2.09	1.86	1.76	0.33	6.04	6.17	3
131		Powder Rim D Exc. (RG #8)	2.85	2.55	0.75	0.75	6.90	6.90	1
132		Powder Rim D-C (RG #9)	2.71	2.71	0.91	0.78	7.11	7.11	1
133		Powder Rim D-C-B (RG #10)	2.32	2.22	0.93	0.82	6.29	6.29	1
134		Powder Rim D-B (RG #11)	2.13	2.53	1.49	0.72	6.87	6.87	1
135		Powder Rim B-Stateline(RG #12)	3.25	3.04	1.82	0.80	8.91	8.91	1
136		Powder Rim B-Exc.#1 (RG #13)	2.75	2.86	1.65	0.93	8.19	8.19	1
137		Powder Rim B-Exc.#2 (RG #14)	4.16	3.27	2.40	0.92	10.75	10.75	1
138		Powder Rim A-B (RG #15)	2.82	3.42	2.16	0.65	9.05	9.05	1
139		Powder Rim A-Exc.#1 (RG #16)	2.70	3.60	1.67	0.97	8.94	8.94	1
140		Powder Rim A (RG #17)	2.23	2.79	1.64	0.63	7.29	7.29	1
118		Power Line Guzzler #6	4.54	2.55	1.47	0.80	9.36	9.36	1
119		Power Line Guzzler #7	4.51	2.33	1.32	0.94	9.10	9.10	1
19		Radio Tower	2.44	2.58	1.90	0.82	7.74	7.11	8
28		Red Wash #2	2.94	2.23	1.88	0.30	7.35	7.37	7

Table 1. Continued

Rain Gauge Number	County	Rain Gauge Name	Precipitation Periods				1968 Total	Long Term Average	No. of Years
			Winter	Spring	Summer	Fall			
154	Sweetwater	Salt Wells Guzzler #14	----	----	Est.[18]	0.64	----	----	-
155		Salt Wells Guzzler #15	----	----	Est.[18]	0.50	----	----	-
156		Salt Wells Guzzler #16	----	----	Est.[18]	0.26	----	----	-
120		Steamboat Guzzler #8	4.70	3.83	1.52	0.84	10.89	10.89	1
121		Steamboat Guzzler #9	4.74	3.74	1.40	0.87	10.75	10.75	1
101		Ten Mile Ridge	2.04	1.86	1.99	0.49	6.38	6.03	3
31	Uinta	Cumberland #1	3.61	2.23	2.02	0.54	8.40	8.93	4
34		Cumberland #4	3.50	2.64	2.76	0.58	9.48	8.34	4
1	Washakie	Ant Hill Worland	1.23	4.21	3.20	1.05	9.69	7.10	9
150		Big Trails Game Range	5.20	6.70	3.50	1.23	16.23	16.23	1
41		Bud Kimball Exc.	2.44	4.77	3.43	0.82	11.46	9.50	7
7		Buffalo Creek Exc.	4.04	5.80	3.31	1.15	14.30	9.57	7
17		Burnt Wagon	1.29	3.74	3.74	0.39	9.16	6.56	7
8		Demer	2.25	3.29	3.26	0.73	9.53	7.98	9
4		Dutch Nick Flat	1.40	3.54	2.80	0.52	8.26	7.23	8
114		East Worland Study Area	1.25	3.51	3.35	0.17	8.28	8.22	2
15		15 Mile Study Pastures	1.05	2.61	3.16	0.03	6.85	6.73	8
36		Smilo Exc.	2.73	2.68	3.72	0.19	9.32	8.58	8
39		2 Mile Hill Exc.	2.92	4.82	3.59	0.89	12.22	10.61	8
13		West Pasture	1.06	3.43	3.08	0.34	7.91	6.97	7
115		Worland Cattle Co. Exc.	1.93	2.87	3.07	0.56	8.43	8.43	1

N.R. - Not Read
1 - Established October 1, 1968
2 - Includes precip. from April 15 to October 15
3 - Includes precip. from October 15, 1967 to July 1, 1968
4 - Includes precip. from October 15, 1967 to July 1, 1968
5 - Includes precip. from April 15 to October 1
6 - Includes precip. from April 15 to October 1
7 - Includes precip. from April 15 to October 1
8 - Includes precip. from April 15 to October 1
9 - Includes precip. from April 15 to October 1
10 - Includes precip. from April 15 to October 1
11 - Includes precip. from April 15 to October 1
12 - Includes precip. from April 15 to October 1
13 - Established June 30, 1968
14 - Established June 30, 1968
15 - Established May 2, 1968
16 - Includes precip. from October 15 to July 1, 1968
17 - Established Sept. 1, 1968
18 - Established Sept. 1, 1968

TABLE II. Precipitation data from the U. S. Weather Bureau Stations for the period October 15, 1967 to October 15 1968.[1]

Station Name	Winter Oct. 15 to Apr. 15	Spring Apr. 15 to July 1	Summer July 1 to Sept. 1	Fall Sept. 1 to Oct. 15	1968 Total[2]	Long Term Average[3]
BIG HORN BASIN						
Anchor Dam	4.54	8.76	3.62	.75	17.67	6.21
Basin	1.61	3.58	2.46	.78	8.43	6.21
Black Mountain	3.62	6.06	3.43	.79	14.10	13.98
Cody 12 SE	2.13	5.40	4.72	1.47	13.72	12.21
Deaver	1.01	3.56	2.34	.69	7.60	5.21
Emblem	1.51	4.61	2.50	1.06	9.58	6.55
Grass Creek	1.72	7.62	5.23	.34	14.91	10.87
Graybull 1 S	1.34	3.45	2.07	.56	7.42	6.07
Heart Mountain	2.04	3.67	3.19	.99	9.89	7.28
Lovell	1.31	3.51	1.69	.90	8.41	6.92
Powell	1.51	5.11	2.27	.79	9.68	5.67
Reirden 2 WSW	2.82	5.65	3.14	1.47	8.10	6.11
Shell	4.21	6.83	3.86	1.20	13.08	8.43
Tensleep 4 NE	4.21	6.43	3.86	1.14	16.10	13.16
Tensleep 16 SSE	4.82	6.33	2.69	1.08	15.19	13.72
Thermopolis 2	3.91	6.38	2.93	.86	14.08	11.01
Thermopolis 25 WNW	2.36	6.78	3.26	.26	12.66	11.15
Worland	1.04	3.31	3.43	.83	8.61	7.76
Worland FAA AP	1.34	3.68	3.03	.67	8.72	7.76
WIND RIVER BASIN						
Boysen Dam	2.05	4.55	3.74	1.05	11.39	9.05
Diversion Dam	3.04	6.02	.93	.41	10.40	9.45
Fort Washakie 2 S	4.62	7.41	2.14	----	14.17	11.90
Gas Hill 4 E	2.83	4.41	1.38	.11	8.73	8.75
Lander WB AP	6.02	6.19	1.61	.56	14.38	13.58
Lost Cabin	2.04	6.72	3.15	.91	12.82	9.25
Morton 1 NW	3.27	5.62	1.27	.40	10.56	8.96
Pavillion	1.93	4.71	1.44	.87	8.95	8.67
Riverton	2.70	3.53	1.58	.56	8.45	8.79
Sand Draw	4.00	2.03	2.56	.47	9.06	9.58
Shoshoni	1.63	4.20	2.12	.54	8.49	6.67
SOUTHWEST WYOMING						
Farson	2.92	3.90	2.43	1.19	9.44	7.11
Kemmerer	1.90	2.86	1.51	.27	6.54	9.12
Rock Springs	3.96	3.32	2.27	.80	10.35	7.87
Rock Springs FAA AP	5.24	2.66	3.06	.79	11.55	8.68
Wamsutter 1 N	1.53	2.79	1.99	.49	6.80	6.51
Muddy Gap	4.12	2.76	1.36	.16	8.40	9.32
Rawlins FAA AP	3.86	3.08	1.89	.95	9.78	10.43

[1] Weather Bureau, 1967 - 1968. Climatological Data - Wyoming. U. S. Dept. of Commerce Vols. 76 and 77.

[2] Computed for the period October 15, 1967 to October 15, 1968.

[3] Weather Bureau, 1967. Climatological Data - Wyoming Annual Summary. U. S. Dept. of Commerce. Vol.76, No. 13 and John Alyea, U. S. Weather Bureau, Cheyenne.

S E C T I O N I V

EXCLOSURE STUDIES (PRODUCTION, COVER, AND PRECIPITATION PHASE)

1968

Vegetation production studies on exclosures and relic areas of the Big Horn and Wind River Basins were initiated during the 1962 field season. Most of the exclosures were constructed in 1959 and 1960. The objectives of the program were to determine:

1. the relationship of annual herbage production to area cover percentage;
2. the relationship of annual herbage production changes to variations in time and amount of available moisture;
3. the relationship of plant height of major forage species to annual herbage production and to time and amount of available moisture;
4. the influence of several range improvement practices on herbage production, area cover, and plant height;
5. the relationship of percentage frequency to area cover and herbage production.

Methods and Procedures

Area cover and herbage production studies on sagebrush-grass sites were conducted on transects of 20 quadrates, 1' x 1', spaced systematically along a randomly located 100' steel tape. On sites dominated by saltbush, data were obtained in like manner except that plot size was 1' x 10'. The plot frame was placed at right angles to the steel tape and vegetation data were subdivided into ten subplots.

Area cover of all herbaceous semi-woody and woody species was estimated within each square foot plot. Data of shrub crown cover and basal cover of plains pricklypear, Hood's phlox, and Hooker sandwort were not combined when comparing area cover to herbaceous production since this group of plants were not clipped.

Forage production was determined by clipping herbaceous species at ground or crown level. Exclosures were clipped on or near the same date as the previous years. Clippings were oven-dried at 70°C for 12 hours prior to weighing.

Precipitation data were recorded from simple aluminum rain guages installed at each exclosure. Precipitation data were recorded four times a year - April 15, July 1, September 1, and October 15.

Metal stakes were driven into the ground for permanent photo location points in the area where production studies are being conducted in each exclosure.

Names of plants which occurred in the production study areas are shown in Table 1. Included are the four letter code names by which the plants are identified in the tabular material; genus, species, and common names, and life form and characteristic longevity of the plants.

1968 Results

A list, by counties, of production study areas is presented in Table 2 of the report. General location of exclosures were shown on maps in the 1964 report. The tabular data of production, cover, frequency, and precipitation are arranged alphabetically by exclosure or study area name following Table 2. .

Production clipping in 1968 was conducted both inside and outside the exclosures to determine the influence of grazing upon the vegetation during the seven previous years. In some instances large variations in production were noted outside the exclosures as compared to inside. Some areas, however, showed very little difference. At the exclosures where sagebrush spraying had been conducted, the response of understory vegetation to the treatment was easily visible, both inside and outside. Production values were lower in the grazed areas but was greater on the sprayed sites than on the non-sprayed.

Pitting and cultivation treatments at the Cochran exclosure have demonstrated large production increases, primarily due to moisture retention, over that of the untreated area.

Both the North Butte and Round Top relic study areas had less production than during the 1967 season but more than the previous 1966 and 1965 seasons. Such findings were the result of abundant precipitation during the 1967 growing season. Precipitation for 1968 was greater than the long term average at the study sites. During the 1968 growing season 66% of the total annual rainfall occurred.

Utilization estimates were made of all grass species, at the time of clipping, outside those exclosures where use by livestock was evident. The Cumberland #2 study area showed 85% use on the outside-spray area and 60% on the outside-native. Granite Mountain showed 50% utilization on both outside-sprayed and non-sprayed areas. Lower Government Draw showed 50% use on the outside-native area and 60% on the outside-spray. Upper Government Draw had 15% utilization of Agsm. on the outside-native area and 15% use of all grass species on the outside-sprayed area. At the Horse Creek Exclosure, the outside-Agsp. study area showed 2% use on Agsp. and 3% on Agsm. The outside-Agsm. study area showed 2% use of Agsp., 1% of Agsm., and 5% of Pose.

The dry spring of 1968 retarded the production of grass species while the relatively wet summer showed an increase in production of annual and perennial forbs. These results indicate that annual and perennial forbs may be capable of utilizing summer moisture to a greater extent than grass species.

In order to obtain some production measure of those species which have not been clipped in the normal field procedures, a modified double-sampling technique was devised and conducted on a number of exclosures. This sampling was done during early September. The technique involved a weight-unit estimation procedure which is rapid and relatively accurate. Estimates were made on transects consisting of 20 quadrates, 4' x 5', spaced from 6-12 steps apart, which enabled the entire exclosure to be sampled. The number of weight-units in each plot was estimated individually by two men and then checked for accuracy. Weight-units were determined prior to the estimation procedure.

TABLE 1. LIST OF PLANT NAMES WHICH OCCURRED IN PRODUCTION STUDY AREAS

Code	Genus - Species	Common Name	Life Form	Longevity
AGCR	Agropyron cristatum	Crested wheatgrass	Grass	Perennial
AGGR	Agropyron griffithsii	Griffith's wheatgrass	Grass	Perennial
AGSM	Agropyron smithii	Western wheatgrass	Grass	Perennial
AGSP	Agropyron spicatum	Bluebunch wheatgrass	Grass	Perennial
ALTE	Allium textile	Textile onion	Forb	Perennial
ANDI	Antennaria dimorpha	Low pussytoe	Forb	Perennial
ANRO	Antennaria rosea	Rose pussytoes	Forb	Perennial
ARA	Arabis spp.	Rockcress	Forb	Perennial
ARAR	Artemisia arbuscula	Low sagebrush	Shrub	Perennial
ARCO	Arenaria congesta	Ballhead sandwort	Forb	Perennial
ARHO	Arenaria hookeri	Hooker sandwort	Forb	Perennial
ARHO2	Arabis holboellii	Holboell rockcress	Forb	Perennial
ARLO	Aristida longiseta	Red three-awn	Grass	Perennial
ARNO	Artemisia nova	Black sagebrush	Shrub	Perennial
ARPE	Artemisia pedatifida	Brown sagebrush	Half-shrub	Perennial
ARSP	Artemisia spinescens	Bud sagebrush	Half-shrub	Perennial
ARTR	Artemisia tridentata	Big sagebrush	Shrub	Perennial
ASMI	Astragalus missouriensis	Missouri milkvetch	Forb	Perennial
ASMI2	Astragalus miser	Timber milkvetch	Forb	Perennial
ASPU	Astragalus purshii	Pursh loco	Forb	Perennial
AST	Astragalus spp.	Milkvetch	Forb	Perennial
ATCO	Atriplex confertifolia	Shadscale slatbush	Shrub	Perennial
ATNU	Atriplex nuttallii	Nuttall saltbush	Half-shrub	Perennial
BOGR	Bouteloua gracilis	Blue grama	Grass	Perennial
BRCO	Bromus commutatus	Hairy chess	Grass	Annual
BRTE	Bromus tectorum	Cheatgrass	Grass	Annual
CAAN	Castilleja angustifolia	Narrowleaf indianpaintbrush	Forb	Perennial
CAEL	Carex eleocharis	Needleleaf sedge	Sedge	Perennial
CAFI	Carex filifolia	Threadleaf sedge	Sedge	Perennial
CAMI	Camelina microcarpa	Littlepod falseflax	Forb	Annual
CAS	Castilleja spp.	Paintbrush	Forb	Perennial
CHAL	Chenopodium album	Lambsquarter	Forb	Annual
CHE	Chenopodiaceae fam.	Goosefoot fam.		
CHTE	Chorispora tenella	Chorispora	Forb	Annual
CHVI	Chrysothamnus viscidiflorus	Green rabbitbrush	Shrub	Perennial
CIR	Cirsium spp.	Thistle	Forb	Perennial
COPA	Commandra pallida	False toadflax	Forb	Perennial
CRE	Crepis spp.	Hawksbeard	Forb	
CRFL	Cryptantha flavoculata	Cryptantha	Forb	Perennial
CYMO	Cymopterus montanus	False carrot	Forb	Perennial
DEPI	Descurainia pinnata	Pinnate tansymustard	Forb	Annual
DRA	Draba spp.		Forb	Perennial
ERCO	Erigeron compositus	Fernleaf fleabane	Forb	Perennial
ERI	Erigeron spp.	Fleabane	Forb	Perennial
ERI2	Eriogonum spp.	Eriogonum	Forb	
EROV	Eriogonum ovalifolium	Cushion eriogonum	Forb	Perennial

Table 1. Continued

Code	Genus - Species	Common Name	Life Form	Longevity
ERPU	Erigeron pumilus	Fleabane	Forb	Perennial
EULA	Eurotia lanata	Winterfat	Half-shrub	Perennial
EUSE	Euphorbia serphyllifolia	Thyme-leaved spurge	Forb	Annual
FEOC	Festuca octoflora	Sixweek fescue	Grass	Annual
GIL	Gilia spp.	Gilia	Forb	Annual
GILE	Gilia leptomeria	Gilia	Forb	Annual
GIPU	Gilia pumila	Gilia	Forb	Annual
GISP	Gilia spicata	Spike gilia	Forb	Perennial
GRSP	Grayia spinosa	Spiny hopsage	Shrub	Perennial
GUSA	Gutierrezia sarothrae	Broom snakeweed	Half-shrub	Perennial
HAGL	Halogeton glomeratus	Halogeton	Forb	Annual
HEPE	Helianthus petiolaris	Prairie sunflower	Forb	Annual
HOPU	Hordeum pusillum	Little barley	Grass	Annual
JUOS	Juniperus osteosperma	Utah juniper	Tree	Perennial
KOCR	Koeleria cristata	June grass	Grass	Perennial
LAP	Lappula spp.	Stick tight	Forb	Annual
LARE	Lappula redowskii	Stickseed	Forb	Annual
LEAL	Lesquerella alpina	Alkaline bladderpod	Forb	Perennial
LEDE	Lepidium densiflorum	Prairie pepperweed	Forb	Annual
LEPE	Lepidium perfoliatum	Clasping pepperweed	Forb	Annual
LEPU	Leptodactylon pungens	Granite gilia	Forb	Perennial
LIN	Linum spp.	Flax	Forb	Perennial
LOSI	Lomatium simplex	Narrowleaf lomatium	Forb	Perennial
LUPU	Lupinus pusillus	Rusty lupine	Forb	Annual
LYG	Lygodesmia spp.	Skeleton plant	Forb	
MAC	Machaeranthera spp.	Aster	Forb	Perennial
MACA	Machaeranthera canescens	Hoary aster	Forb	Perennial
MAGL	Machaeranthera glabriuscula	Woody aster	Half-shrub	Perennial
MATA	Machaeranthera tanacetifolia	Aster	Forb	Annual
MUDI	Musineon divaricatum	Falsecarrot	Forb	Perennial
MUSQ	Munroa squarrosa	False buffalograss	Grass	Annual
OEAL	Oenothera albicanlis	Pale eveningprimrose	Forb	Perennial
OECA	Oenothera caespitosa	Tufted eveningprimrose	Forb	Perennial
OECO	Oenothera contorta	Plains eveningprimrose	Forb	Annual
OEN	Oenothera spp.	Evening primrose	Forb	
OESC	Oenothera scapoidea	Evening primrose	Forb	Annual
OPPO	Opuntia polyacantha	Plains pricklypear	Forb	Perennial
ORHY	Oryzopsis hymenoides	Indian ricegrass	Grass	Perennial
PASE	Paronychia sessiliflora	Stemless nailwort	Forb	Perennial
PEN	Penstemon spp.	Penstemon	Forb	Perennial
PHAU	Physaria australis	Twinpod	Forb	Perennial
PHHO	Phlox hoodii	Hood's phlox	Forb	Perennial
PHLO	Phlox longifilia	Long-leaf phlox	Forb	Perennial
PHL2	Phlox spp.	Phlox	Forb	
PHMU	Phlox multiflora	Flowery phlox	Forb	Perennial
PLPA	Plantago patagonica	Wooly indianwheat	Forb	Annual
PLSP	Plantago spinescens	Spiny indianwheat	Forb	Annual
POAM	Poa ampla	Big bluegrass	Grass	Perennial
POFE	Poa fendleriana	Muttongrass	Grass	Perennial

Table 1. Continued

Code	Genus - Species	Common Name	Life Form	Longevity
POSE	Poa secunda	Sandberg bluegrass	Grass	Perennial
PSTE	Psoralea tenuiflora	Slimflower scurfpea	Forb	Perennial
SAKA	Salsola kali	Russian thistle	Forb	Annual
SAVE	Sarcobatus vermiculatus	Greasewood	Shrub	Perennial
SECA	Senecio canus	Woolly groundsel	Forb	Perennial
SEN	Senecio spp.	Groundsel	Forb	
SIHY	Sitanion hystrix	Squirreltail bottlebrush	Grass	Perennial
SPAI	Sporobolus airoides	Alkali sacaton	Grass	Perennial
SPCO	Sphaeralcea coccinea	Scarlet globemallow	Forb	Perennial
SPCR	Sporobolus cryptandrus	Sand dropseed	Grass	Perennial
STCO	Stipa comata	Needleandthread	Grass	Perennial
SYOC	Symphoricarpos occidentalis	Western snowberry	Shrub	Perennial
TAOF	Taraxacum officinale	Common dandelion	Forb	Perennial
TECA	Tetradymia canescens	Gray horsebrush	Shrub	Perennial
TESP	Tetradymia spinosa	Spiny horsebrush	Shrub	Perennial
TRI	Trifolium spp.	Clover	Forb	
UNK	Unknown			
VIAM	Vicia americana	American vetch	Forb	Perennial
VIO	Violaceae	Violet family	Forb	Perennial
VIVA	Viola vallicola	Nuttall violet	Forb	Perennial

Table 2.. An alphabetical listing of study area, the county where each occurs and the treatments studied in each area.

County Name Code	Exclosure Name	County	Treatment	
1001	Ant Erad. Lander Exc.	Fremont	Inside	Native
			Outside	Native
1002	Boysen Reservoir Exc.	Fremont	Inside	Native
			Outside	Native
1003	Lower Gov't Draw Exc.	Fremont	Inside	Native
			Inside	Spray
			Outside	Native
			Outside	Spray
1004	McGraw Flat Exc.	Fremont	Inside	Native
			Outside	Native
1005	Sweetwater Exc.	Fremont	Inside	Native
			Outside	Native
1006	Upper Gov't Draw Exc.	Fremont	Inside	Native
			Inside	Spray
			Outside	Native
			Outside	Spray
1007	Granite Mountain Exc.	Fremont	Inside	Native
			Inside	Spray
			Outside	Native
			Outside	Spray
2002	Buffalo Creek Exc.	Washakie	Inside	Native
			Outside	Native
2003	Burnt Wagon Exc.	Washakie	Inside	Native
			Outside	Native
2004	Demer Exc.	Washakie	Inside	Native
			Outside	Native
2005	Dutch Nick Flat Exc.	Washakie	Inside	Native
			Outside	Native
2006	West Pasture Exc.	Washakie	Inside	Native
			Outside	Native
2007	Bud Kimball Exc.	Washakie	Inside	Native
			Inside	Spray
			Outside	Native
			Outside	Spray
2009	Smilo Exc.	Washakie	Inside	Native
			Inside	Spray
			Outside	Native
			Outside	Spray
2010	Two Mile Hill Exc.	Washakie	Inside	Native
			Outside	Native
1501	Cochran Exc.	Hot Springs	Inside	Native
			Inside	Spray
			Inside	Pitted
			Inside	Cultivated
			Outside	Native
			Outside	Spray

(continued)

Table 2. Continued

County Name Code	Exclosure Name	County	Treatment	
1502	Kirby Creek Exc.	Hot Springs	Inside	Native
			Outside	Native
1503	North Butte Relic Area (Thermopolis)	Hot Springs		Native
1504	Round Top Relic Area	Hot Springs		Native
1505	Sand Gulch Exc.	Hot Springs	Inside	Native
			Outside	Native
0901	Halogeton Exc. #1	Big Horn	Inside	Native
0902	Halogeton Exc. #2	Big Horn	Inside	Native
0903	Halogeton Exc. #3	Big Horn	Inside	Native
0904	Halogeton Pasture #1	Big Horn	Outside	Native
0905	Halogeton Pasture #2	Big Horn	"	"
0907	Halogeton Pasture #4A	Big Horn	"	"
0908	Halogeton Pasture #4B	Big Horn	"	"
0909	Halogeton Pasture #5	Big Horn	"	"
0910	Halogeton Pasture #6	Big Horn	"	"
0911	Halogeton Pasture #7A	Big Horn	"	"
0912	Halogeton Pasture #7B	Big Horn	"	"
0913	Horse Creek Exc.	Big Horn	Inside	AGSM
			Inside	AGSP
			Outside	AGSM
			Outside	AGSP
0914	Kane Deer Exc.	Big Horn	Inside	Native
			Inside	Spray
			Outside	Native
			Outside	Spray
0404	Farson Exc.	Sweetwater	Inside	Native
			Outside	Native
1901	Cumberland Exc. #1	Uinta	Inside	Native
			Inside	Spray
			Outside	Native
			Outside	Spray
1902	Cumberland Exc. #4	Uinta	Inside	Native
			Outside	Native
1201	Cumberland Exc. #2	Lincoln	Inside	Native
			Inside	Spray
			Outside	Native
			Outside	Spray
1202	Cumberland Exc. #3	Lincoln	Inside	Native
			Inside	Spray
			Outside	Native
			Outside	Spray

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Ant Eradication Exc. Lander Inside Native 23 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	274.0	13.7	----	14				
STCO	6.3	0.3	8.48	6	11.0	1.83	1.75	52.80
AGSM	10.1	0.5	13.59	20	28.13	1.41	2.78	135.02
POSE	29.5	1.5	41.46	13	15.79	1.21	.53	75.79
BOGR	24.0	1.2	32.30	2	4.20	2.10	.17	20.16
CAEL	0.5	T	T	1	.42	.42	.84	2.02
ANNUAL FORBS	3.5	----	----	18	4.90	.27	1.40	23.52
LEDE	0.3	T	T	3				
PLPA	3.1	0.2	4.17	18				
CHAL	0.1	T	T	1				
PERENNIAL FORBS	0.4	----	----	4	1.18	.29	.29	5.66
*PHHO	8.5	0.4	----	3				
SPCO	0.2	T	T	2				
*OPPO	11.5	0.6	----	4				
ALTE	0.2	T	T	2				
TOTAL		3.7	100.00		65.62			314.97

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	222.4
OPPO	26.2
PHHO	12.7
TOTAL	261.3

Precipitation Data:

R. G. #5 - Lander Ant Exc.

October 15 to April 15	= 3.76
April 15 to July 1	= 5.44
July 1 to September 1	= 1.95
September 1 to October 15	= 0.34
Season Total	= 11.49
Long Term Average	= 8.62

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Ant Eradication Exc. Lander Outside Native 23 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	215.2	10.8	----	12				
STCO	2.0	0.1	1.33	1	3.49	3.49	1.74	16.75
ORHY	1.5	0.1	.99	2	1.00	.50	.66	4.80
BOGR	110.0	5.5	73.56	6	15.05	2.51	.14	72.24
AGSM	12.2	0.6	8.13	19	29.74	1.57	2.44	142.75
POSE	17.2	0.9	11.46	9	10.29	1.14	.59	49.39
ANNUAL FORBS	5.2	----	----	17	4.69	.27	.90	22.51
PLPA	4.0	0.2	2.66	15				
LEDE	1.0	0.1	.67	10				
DEPI	0.1	T	T	1				
GIL	0.1	T	T	1				
PERENNIAL FORBS	2.0	----	----	8	1.39	.17	.69	6.67
*PHHO	14.5	0.7	----	5				
*OPPO	60.0	3.0	----	3				
SPCO	1.8	0.1	1.20	6				
ALTE	0.2	T	T	2				
TOTAL		7.6	100.00		65.65			315.11

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #5 - Lander Ant Exc.

October 15 to April 15	= 3.76
April 15 to July 1	= 5.44
July 1 to September 1	= 1.95
September 1 to October 15	= 0.34
Season Total	= 11.49
Long Term Average	= 8.62

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Boysen Exclosure Inside Native 31 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
BOGR	113.5	5.7	97.19	20	48.38	2.42	.43	232.22
ANNUAL FORBS	0.2	----	----	2	.07	.03	.35	.34
HAGL	0.1	T	T	1				
UNK	0.1	T	T	1				
PERENNIAL FORBS	3.9	----	----	10	2.87	.28	.74	13.77
SPCO	3.3	0.2	2.81	9				
*OPPO	25.0	1.3	----	1				
ASPU	0.6	T	T	2				
TOTAL		5.9	100.00		51.32			246.33

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

OPPO	26.8
TOTAL	26.8

[redacted]

Precipitation Data:
R. G. #10 - Boysen Reservoir Exc.

October 15 to April 15	= 0.97
April 15 to July 1	= 2.28
July 1 to September 1	= 2.30
September 1 to October 15	= 0.38
Season Total	= 5.93
Long Term Average	= 4.90

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Boysen Exclosure Outside Native 31 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
ARSP	3.0	0.2	4.88	1	.26	.26	.08	1.25
BOGR	69.2	3.5	85.36	16	30.63	1.91	.44	147.02
STCO	1.0	0.1	2.44	1	.64	.64	.64	3.07
ANNUAL FORBS	5.0	----	----	15	11.19	.75	2.24	53.71
HAGL	4.1	0.2	4.88	15				
UNK	0.5	T	T	1				
MATA	0.3	T	T	3				
SAKA	0.1	T	T	1				
PERENNIAL FORBS	2.0	----	----	7	1.44	.21	.72	6.91
SPCO	1.4	0.1	2.44	6				
ASPU	0.6	T	T	2				
TOTAL		4.1	100.00		44.16			211.96

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #10 - Boysen Reservoir Exc.

October 15 to April 15	=	0.97
April 15 to July 1	=	2.28
July 1 to September 1	=	2.30
September 1 to October 15	=	0.38
Season Total	=	5.93
Long Term Average	=	4.90

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Lower Govt. Draw Exclosure Inside Native 24 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	320.0	16.0	----	13				
POSE	35.6	1.8	52.36	20	23.23	1.16	.65	111.50
AGSM	12.1	0.6	16.19	19	24.72	1.30	2.04	118.66
STCO	23.5	1.2	31.45	10	33.70	3.37	1.43	161.76
ANNUAL GRASS	0.8	----	----	8				
FEOC	0.3	T	T	3	.55	.07	.68	2.64
BRTE	0.5	T	T	5				
ANNUAL FORBS	1.3	----	----	8	1.18	.15	.91	5.66
GILE	0.4	T	T	4				
LEDE	0.4	T	T	4				
LAP	0.5	T	T	1				
PERENNIAL FORBS	1.4	----	----	6	1.03	.17	.74	4.94
OECA	0.4	T	T	4				
MACA	0.5	T	T	1				
ASM12	0.5	T	T	1				
TOTAL		3.6	100.00		84.41			405.16

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	295.2
OPPO	5.1
TOTAL	300.3

Precipitation Data:

R. G. #16 Lower Govt. Draw

October 15 to April 15	= 4.85
April 15 to July 1	= 4.00
July 1 to September 1	= .97
September 1 to October 15	= .21
Season Total	= 10.03
Long Term Avg.	= 10.49

HERBAGE AND PRECIPITATION DATA FORM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Lower Govt. Draw Exclosure Inside-Spray 24 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
BRTE	59.5	3.0	69.76	20	128.85	6.44	2.16	618.48
AGSM	6.7	0.3	6.98	18	18.41	1.02	2.75	88.37
STCO	17.1	0.9	20.93	14	37.11	2.65	2.17	178.13
POSE	2.1	0.1	2.33	5	2.51	.50	1.19	12.05
ANNUAL FORBS	0.1	----	----	1	.18	.18	1.80	.86
LEDE	0.1	T	T	1				
PERENNIAL FORBS	0.1	----	----	1	.42		4.20	2.02
SPCO	0.1	T	T	1				
TOTAL		4.3	100.00		187.48			899.91

T - Trace

Precipitation Data:

R. G. #16 Lower Govt. Draw

October 15 to April 15	= 4.85
April 15 to July 1	= 4.00
July 1 to September 1	= .97
September 1 to October 15	= .21
Season Total	= 10.03
Long Term Avg.	= 10.49

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Lower Govt. Draw Exclosure Outside Native 24 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	306.0	15.3	----	14				
CHVI	7.0	0.4	9.43	1	1.68	1.68	.24	8.06
POSE	20.5	1.0	27.62	13	17.80	1.37	.87	85.44
AGSM	3.5	0.2	4.72	14	10.86	.77	3.10	52.13
STCO	9.0	0.5	12.13	7	5.25	.75	.58	25.20
KOCR	0.7	T	T	3	1.00	.33	1.43	4.80
ANNUAL GRASS	32.8	----	----	19	51.35	2.70	1.57	246.48
FEOC	0.5	T	T	1				
BRTE	32.3	1.6	46.10	19				
ANNUAL FORBS	0.5	----	----	5	10.01	2.00	20.02	48.05
DEPI	0.1	T	T	1				
PLSP	0.4	T	T	4				
PERENNIAL FORBS	0.2	----	----	2	.12	.06	.60	.58
SPCO	0.1	T	T	1				
ASMIZ	0.1	T	T	1				
TOTAL		3.7	100.00		98.07			470.74**

* Not computed in percent composition
**Reflects approx. utilization of 50% at time of clipping (corrected to 884.75 lbs.)
T - Trace

Precipitation Data:
R. G. #16 Lower Govt. Draw

October 15 to April 15	= 4.85
April 15 to July 1	= 4.00
July 1 to September 1	= .97
September 1 to October 15	= .21
Season Total	= 10.03
Long Term Avg.	= 10.49

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Lower Govt. Draw Exclosure Outside-Spray 24 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
POSE	45.0	2.3	58.98	19	14.15	.74	.31	67.92
AGSM	9.4	0.5	12.82	19	19.09	1.00	2.03	91.63
BRTE	6.3	0.3	7.69	18	8.90	.49	1.41	42.72
STCO	14.0	0.7	17.95	7	3.60	.51	.26	17.28
ANNUAL FORBS	0.3	----	----	3	.12	.04	.40	.58
LEDE	0.1	T	T	1				
LARE	0.1	T	T	1				
DEPI	0.1	T	T	1				
PERENNIAL FORBS	0.9	----	----	5	.93	.19	1.03	4.46
SPCO	0.9	0.1	2.56	5				
TOTAL		3.9	100.00		46.79			224.59**

**Reflects approx. utilization of 60% at time of clipping (corrected to 370.77 lbs.)

T - Trace

Precipitation Data:

R. G. #16 Lower Govt. Draw

October 15 to April 15	= 4.85
April 15 to July 1	= 4.00
July 1 to September 1	= .97
September 1 to October 15	= .21
Season Total	= 10.03
Long Term Avg.	= 10.49

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

McGraw Flat Exclosure Inside Native 26 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	400.5	20.0	----	16				
CHVI	3.1	0.2	5.55	2	.41	.21	.13	1.97
POSE	45.6	2.3	63.89	14	24.21	1.73	.53	116.21
AGSM	8.6	0.4	11.11	20	17.01	.85	1.97	81.65
POAM	12.5	0.6	16.67	6	8.35	1.39	.67	40.08
ANNUAL FORBS	2.0	----	----	1	.85	.85	.43	4.08
PHL2	2.0	0.1	2.78	1				
PERENNIAL FORBS	0.9	----	----	3	.59	.19	.66	2.83
SPCO	0.6	T	T	2				
*PHHO	29.0	1.5	----	12				
VIAM	0.1	T	T	1				
ARHO2	0.2	T	T	2				
TOTAL		3.6	100.00		51.42			246.82

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	183.6
PHHO	164.7
ARHO	1.1
TOTAL	349.4

Precipitation Data:

R. G. #14 McGraw Flat Exc.

October 15 to April 15	= 3.02
April 15 to July 1	= 3.30
July 1 to September 1	= 1.10
September 1 to October 15	= .41
Season Total	= 7.83
Long Term Avg.	= 9.24

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

McGraw Flat Exclosure Outside Native 26 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	300.5	15.0	----	16				
CHVI	21.0	1.1	22.03	3	2.31	.77	.11	11.09
AGSM	8.3	0.4	8.31	18	10.41	.58	1.25	49.97
POSE	61.6	3.1	61.66	19	20.70	1.09	.34	99.36
POAM	3.5	0.2	3.50	2	1.50	.75	.43	7.20
AGSP	2.0	0.1	2.00	1	1.87	1.87	.94	8.98
ANNUAL FORBS	0.7	----	----	3	.38	.13	.54	1.82
MATA	0.7	T	T	3				
PERENNIAL FORBS	2.8	----	----	15	3.36	.22	1.20	16.13
TRI	0.1	T	T	1				
AST	0.2	T	T	2				
SPCO	1.2	0.1	1.20	4				
VIAM	1.3	0.1	1.30	13				
*PHHO	45.6	2.3	----	13				
TOTAL		5.1	100.00		40.53			194.55

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #14 McGraw Flat Exc.

October 15 to April 15	=	3.02
April 15 to July 1	=	3.30
July 1 to September 1	=	1.10
September 1 to October 15	=	.41
Season Total	=	7.83
Long Term Avg.	=	9.24

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXLCOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Sweetwater Exclosure Inside Native 31 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	234.5	11.7	----	13				
CHVI	6.0	0.3	5.00	4	1.45	.36	.24	6.96
KOCR	17.1	0.9	15.00	10	16.96	1.69	.99	81.41
POSE	22.0	1.1	18.33	13	9.12	.70	.41	43.77
STCO	33.8	1.7	28.33	15	27.59	1.84	.82	132.43
AGSM	3.6	0.2	3.33	12	2.42	.20	.67	11.62
CAFI	29.6	1.5	25.00	12	7.28	.61	.23	34.94
CAEL	1.7	0.1	1.67	5	.38	.07	.22	1.82
PERENNIAL FORBS	4.5	----	----	6	2.21	.37	.49	10.61
ALTE	0.5	T	T	1				
*PHHO	36.0	1.8	----	5				
EROV	0.5	T	T	1				
ASMI2	2.0	0.1	1.67	1				
*OPPO	2.0	0.1	----	1				
ARHO2	1.5	0.1	1.67	2				
TOTAL		6.0	100.00		67.41			323.56

* Not computed in percent composition
T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	75.2
PHHO	62.5
ARHO	8.4
OPPO	4.4
LEPU	8.2
ARNO	47.5
TECA	8.0
TOTAL	214.2

Precipitation Data:
R. G. #11 Sweetwater Exclosure

October 15 to April 15	= 4.93
April 15 to July 1	= NR
July 1 to September 1	= NR
September 1 to October 15	= 5.61
Season Total	= 10.54
Long Term Average	= 7.16

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Sweetwater Exclosure Outside Native 31 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	69.5	3.5	----	4				
CHVI	3.0	0.2	3.53	2	.53	.26	.17	2.54
GUSA	1.0	0.1	1.18	2	.73	.37	.17	3.50
KOCR	17.3	0.9	22.77	13	5.77	.44	.33	27.69
POSE	15.1	0.8	17.76	17	3.97	.23	.26	19.06
STCO	17.5	0.9	19.58	13	7.53	.58	.43	36.14
AGSM	3.8	0.2	4.47	12	2.40	.20	.63	11.52
CAFI	14.6	0.7	17.17	13	5.38	.41	.37	25.82
CAEL	6.5	0.3	7.65	15	3.25	.21	.50	15.60
PERENNIAL FORBS	6.2	----	----	8	2.16	.27	.35	10.37
*PHHO	17.0	0.9	----	6				
PSTE	0.6	T	T	2				
COPA	0.5	T	T	1				
ARA	0.1	T	T	1				
EROV	1.0	0.1	1.18	2				
CRFL	3.0	0.2	3.53	2				
ASMI2	1.0	0.1	1.18	1				
TOTAL		4.5	100.00		31.72			152.26

* Not computed in percent composition

T - Trace

Precipitation Data:
R. G. # 11 Sweetwater Exclosure

October 15 to April 15	= 4.93
April 15 to July 1	= NR
July 1 to September 1	= NR
September 1 to October 15	= 5.61
Season Total	= 10.54
Long Term Average	= 7.16

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Upper Govt. Draw Exc. Inside Native 24 Aug. '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	203.5	10.2	----	14				
AGSM	15.3	0.8	28.02	20	30.24	1.51	1.98	145.15
POSE	15.9	0.8	30.95	18	6.75	.38	.42	32.40
KOCR	14.8	0.7	27.10	10	15.87	1.59	1.07	76.17
STCO	1.0	0.1	1.83	1	.52	.52	.52	2.49
ANNUAL FORBS	0.7	----	----	7	.76	.11	1.08	3.65
PLSP	0.7	T	T	7				
PERENNIAL FORBS	6.9	----	----	7	1.23	.17	.18	5.90
LEPU	5.6	0.3	10.27	4				
MACA	1.0	0.1	1.83	1				
*PHHO	24.4	1.2	----	12				
SPCO	0.2	T	T	2				
PEN	0.1	T	T	1				
TOTAL		2.8	100.00		55.37			265.76

* Not computed in percent composition
T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	142.8
PHHO	62.1
OPPO	2.4
TOTAL	207.3

Precipitation Data:

R. G. #9 Upper Govt. Draw

October 15 to April 15	= 3.95
April 15 to July 1	= 3.35
July 1 to September 1	= 1.00
September 1 to October 15	= .20
Season Total	= 8.50
Long Term Average	= 8.30

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Upper Govt. Draw Exc. Inside-Spray 24 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
AGSM	31.5	1.6	47.06	20	101.50	5.07	3.22	487.20
KOCR	10.2	0.5	14.71	10	14.48	1.45	1.42	69.50
POSE	20.2	1.0	29.41	20	17.47	.87	.86	83.86
ANNUAL GRASS	1.5	----	----	8	4.88	.61	3.25	23.42
BRCO	0.6	T	T	6				
BRTE	0.9	0.1	2.94	5				
ANNUAL FORBS	1.1	----	----	7	1.17	.17	1.06	5.62
PLSP	0.5	T	T	5				
LARE	0.4	T	T	4				
DEPI	0.2	T	T	2				
PERENNIAL FORBS	3.0	----	----	2	2.72	1.36	.91	13.06
*PHHO	0.1	T	----	1				
MACA	1.0	0.1	2.94	1				
ASPU	2.0	0.1	2.94	1				
TOTAL		3.4	100.00		142.22			682.66

* Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #9 Upper Govt. Draw

October 15 to April 15	=	3.95
April 15 to July 1	=	3.35
July 1 to September 1	=	1.00
September 1 to October 15	=	.20
Season Total	=	8.50
Long Term Avg.	=	8.30

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Upper Govt. Draw Exc. Outside Native 24 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	113.6	5.7	----	11				
POSE	46.2	2.3	60.65	20	17.21	.86	.37	82.61
KOCR	7.2	0.4	9.41	7	4.54	.65	.63	21.79
AGSM	12.0	0.6	15.68	20	24.69	1.23	2.06	118.51
BRTE	0.1	T	T	1	.20	.20	2.00	.96
ANNUAL FORBS	2.8	----	----	16	3.35	.21	1.19	16.08
PLSP	2.8	0.1	3.66	16				
PERENNIAL FORBS	8.2	----	----	12	4.24	.35	.52	20.35
CRE	0.1	T	T	1				
MACA	5.0	0.3	6.54	11				
*PHHO	56.0	2.8	----	15				
LEPU	2.0	0.1	2.62	1				
ARH02	1.1	0.1	1.44	2				
TOTAL		3.9	100.00		54.23			260.30**

* Not computed in percent composition
**Reflects approx. utilization of 15% on Agsm at time of clipping
(corrected to 281.21 lbs.)
T - Trace

Precipitation Data:

R. G. #9 Upper Govt. Draw		
October 15 to April 15	=	3.95
April 15 to July 1	=	3.35
July 1 to September 1	=	1.00
September 1 to October 15	=	.20
Season Total	=	8.50
Long Term Avg.	=	8.30

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOCETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Upper Govt. Draw Exc. Outside Spray 24 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	1.0	0.1	----	1				
BRTE	0.4	T	T	4	1.80	.45	4.50	8.64
STCO	9.6	0.5	10.08	5	6.20	1.24	.65	29.76
KOCR	4.7	0.2	4.94	8	5.08	.64	1.08	24.38
AGSM	21.6	1.1	22.68	19	37.74	1.98	1.75	181.15
POSE	52.0	2.6	57.46	20	24.20	1.21	.46	116.16
ANNUAL FORBS	3.4	----	----	17	5.72	.34	1.68	27.46
PLSP	3.3	0.2	3.47	17				
LARE	0.1	T	T	1				
PERENNIAL FORBS	3.5	----	----	10	1.59	.16	.45	7.63
OECA	0.1	T	T	1				
MACA	2.1	0.1	2.21	8				
LEPU	1.1	0.1	1.16	2				
ANRO	0.1	T	T	1				
ANDI	0.1	T	T	1				
TOTAL		4.8	100.00		82.33			395.18**

* Not computed in percent composition
**Reflects approximate utilization of 15% at time of clipping (corrected to 458.72 lbs.)
T - Trace

Precipitation Data:

R. G. #9 Upper Govt. Draw

October 15 to April 15	=	3.95
April 15 to July 1	=	3.35
July 1 to September 1	=	1.00
September 1 to October 15	=	.20
Season Total	=	8.50
Long Term Average	=	8.30

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Granite Mtn. Exclosure Inside-Native 26 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	217.1	10.9	----	9				
POSE	75.0	3.8	82.60	19	30.24	1.59	.40	145.15
AGSM	10.2	0.5	10.89	20	27.66	1.38	2.71	132.77
POSE	1.0	0.1	2.17	1	.85	.85	.85	4.08
PERENNIAL FORBS	5.2	----	----	15	6.74	.45	1.29	32.35
PEN	2.7	0.1	2.17	4				
ERPU	1.4	0.1	2.17	6				
*PHHO	16.0	0.8	----	8				
ARHO2	0.3	T	T	3				
ASMI2	0.8	T	T	8				
TOTAL		4.6	100.00		65.49			314.35

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	212.0
PHHO	32.4
TOTAL	244.4

Precipitation Data:
R. G. #6 - Granite Mtn. Exc.

October 15 to April 15	=	2.80
April 15 to July 1	=	3.70
July 1 to September 1	=	1.70
September 1 to October 15	=	0.01
Season Total	=	8.21
Long Term Average	=	8.73

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Granite Mtn. Exclosure Inside-Spray 26 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	102.0	5.1	----	7				
POSE	82.0	4.1	74.55	20	35.01	1.75	.43	168.05
AGSM	20.1	1.0	18.18	20	43.81	2.19	2.18	210.29
POFE	2.0	0.1	1.82	1	2.96	2.96	1.48	14.21
SIHY	5.0	0.3	5.45	2	4.82	2.41	.96	23.14
PERENNIAL FORBS	0.9	----	----	5	1.74	.35	1.93	8.35
ARHO2	0.2	T	T	2				
ASMI2	0.6	T	T	2				
*PHHO	2.6	0.1	----	4				
ERPU	0.1	T	T	1				
TOTAL		5.5	100.00		88.34			424.04

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #6 - Granite Mtn. Exc.

October 15 to April 15	= 2.80
April 15 to July 1	= 3.70
July 1 to September 1	= 1.70
September 1 to October 15	= 0.01
Season Total	= 8.21
Long Term Average	= 8.73

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Granite Mtn. Exclosure Outside-Native 26 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	335.6	16.8	-----	13				
POFE	69.0	3.5	74.46	19	20.57	1.08	.29	98.74
AGSM	8.4	0.4	8.51	20	14.53	.73	1.73	69.74
POSE	9.7	0.5	10.64	15	3.46	.23	.36	16.61
PERENNIAL FORBS	6.3	-----	-----	14	5.45	.39	.87	26.16
*PHHO	59.6	3.0	-----	14				
ASMI2	1.3	0.1	2.13	5				
ERPU	2.7	0.1	2.13	10				
PEN	2.1	0.1	2.13	2				
ARHO2	0.2	T	T	2				
TOTAL		4.7	100.00		44.01			211.25**

*Not computed in percent composition

T - Trace

**Reflects approximate untilization of 50% at time of clipping (corrected to 396.34 lbs.)

Precipitation Data:

R. G #6 - Granite Mtn. Exc.

October 15 to April 15	=	2.80
April 15 to July 1	=	3.70
July 1 to September 1	=	1.70
September 1 to October 15	=	0.01
Season Total	=	8.21
Long Term Average	=	8.73

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Granite Mtn. Exclosure Outside-Spray 26 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	49.0	2.5	----	5				
POSE	52.0	2.6	68.43	19	21.81	1.15	.42	104.69
AGSM	17.2	0.9	23.68	19	27.76	1.46	1.61	133.25
STCO	1.0	0.1	2.63	1	1.48	1.48	1.48	7.10
SIHY	3.0	0.2	5.26	2	4.57	2.28	1.52	21.94
PERENNIAL FORBS	0.2	-----	-----	2	.92	.46	4.60	4.42
ASMI2	0.1	T	T	1				
ARHO2	0.1	T	T	1				
*PHHO	11.0	0.6	-----	3				
TOTAL		3.8	100.00		56.54			271.40**

*Not computed in percent composition

T - Trace

**Reflects approximate utilization of 50% at time of clipping (corrected to 538.38 lbs.)

Precipitation Data:

R. G. #6 - Granite Mtn. Exc.

October 15 to April 15	=	2.80
April 15 to July 1	=	3.70
July 1 to September 1	=	1.70
September 1 to October 15	=	0.01
Season Total	=	8.21
Long Term Average	=	8.73

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Buffalo Creek Exclosure Inside Native 29 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	33.6	1.7	----	8				
AGSM	1.9	0.1	2.13	6	9.36	1.56	4.93	44.93
AGSP	34.7	1.7	36.17	18	89.01	4.95	2.56	427.25
POSE	22.6	1.1	23.40	20	10.31	.52	.46	49.49
BOGR	31.0	1.6	34.04	7	13.23	1.89	.43	63.50
BRTE	0.2	T	T	2	.34	.17	1.70	1.63
ANNUAL FORBS	4.1	----	----	19	4.12	.22	1.00	19.78
LEDE	0.6	T	T	6				
PLSP	3.5	0.2	4.26	19				
PERENNIAL FORBS	0.7	----	----	7	.87	.12	1.24	4.17
*PHHO	14.6	0.7	----	5				
*OPPO	24.0	1.2	----	3				
SPCO	0.3	T	T	3				
MACA	0.4	T	T	4				
TOTAL		4.7	100.00		127.24			610.75

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

OPPO	107.7
ARTR	111.0
PHHO	17.6
TOTAL	236.3

Precipitation Data:
R. G. #7 - Buffalo Creek Exc.

October 15 to April 15	= 4.04
April 15 to July 1	= 5.80
July 1 to September 1	= 3.31
September 1 to October 15	= 1.15
Season Total	= 14.30
Long Term Average	= 9.57

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Buffalo Creek Exclosure Outside Native 29 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	35.1	1.8	----	7				
AGSM	5.2	0.3	6.38	10	20.39	2.04	3.92	97.87
AGSP	18.0	0.9	19.15	11	51.16	4.65	2.84	245.57
POSE	30.0	1.5	31.92	19	15.46	.81	.52	74.21
BRTE	2.8	0.1	2.13	11	3.69	.34	1.32	17.71
BOGR	23.0	1.2	25.53	4	4.17	1.04	.18	20.02
ANNUAL FORBS	14.9	----	----	20	19.28	.96	1.24	92.54
LEDE	0.3	T	T	3				
PLSP	14.6	0.7	14.89	19				
PERENNIAL FORBS	1.5	----	----	4	1.44	.36	1.80	6.91
MACA	0.8	T	T	4				
*OPPO	45.5	2.3	----	2				
*PHHO	7.0	0.4	----	3				
CRE	0.7	T	T	3				
TOTAL		4.7	100.00		115.59			554.83

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #7 - Buffalo Creek Exc.

October 15 to April 15	= 4.04
April 15 to July 1	= 5.80
July 1 to September 1	= 3.31
September 1 to October 15	= 1.15
Season Total	= 14.30
Long Term Average	= 9.57

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Burnt Wagon Exclosure Inside Native 18 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. Ft.	Average Weight Per Plot Occurrences	Wgt./ Unit Basal Area	Pounds Per Acre
	A	B	C	E	F	G	H	I
ATNU	1239.0	6.2	95.38	88	407.51	4.63	.33	195.60
SIHY	39.0	0.2	3.08	10	4.26	.43	.11	2.04
ANNUAL FORBS	13.0	----	----	13	.23	.01	.01	.11
EUSE	12.0	0.1	1.54	12				
LARE	1.0	T		1				
PERENNIAL FORBS	9.0	----	----	5	2.62	.52	.29	1.26
MUDI	2.0	T	T	2				
MACA	7.0	T	T	3				
TOTAL		6.5	100.00		414.62			199.01

T - Trace

Precipitation Data:

R. G. #17 Burnt Wagon Exclosure

October 15 to April 15	= 1.29
April 15 to July 1	= 3.74
July 1 to September 1	= 3.74
September 1 to October 15	= .39
Season Total	= 9.16
Long Term Average	= 6.56

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Burnt Wagon Exclosure Outside Native 18 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1206.0	6.0	93.76	80	466.57	5.83	.39	223.95
SIHY	11.0	0.1	1.56	6	6.83	1.14	.62	3.28
ANNUAL FORBS	32.0	----	----	24	3.48	.15	.11	1.67
EUSE	20.0	0.1	1.56	20				
LARE	1.0	T		1				
MATA	11.0	0.1	1.56	3				
PERENNIAL FORBS	18.0	----	----	14	.29	.02	.01	.14
MUDI	15.0	0.1	1.56	11				
MACA	2.0	T	T	2				
ALTE	1.0	T	T	1				
TOTAL		6.4	100.00		477.17			229.04

T - Trace

Precipitation Data:

R. G. #17 Burnt Wagon Exclosure

October 15 to April 15	=	1.29
April 15 to July 1	=	3.74
July 1 to September 1	=	3.74
September 1 to October 15	=	.39
Season Total	=	9.16
Long Term Average	=	6.56

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Demer Exclosure Inside Native 29 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	235.0	11.8	----	9				
POSE	25.1	1.3	36.6	16	12.12	.76	.48	58.18
AGSP	1.1	0.1	1.58	3	.76	.25	.69	3.65
SIHY	1.1	0.1	1.58	3	1.04	.35	.94	4.99
BOGR	22.1	1.1	31.94	9	8.97	.99	.41	43.06
AGSM	0.1	T	-----	1	.20	.20	2.00	.96
ANNUAL GRASS	17.5	-----	----	19	19.38	1.02	1.11	93.02
BRTE	15.9	0.8	22.84	16				
FEOC	1.6	0.1	2.29	12				
ANNUAL FORBS	2.6	-----	----	14	1.21	.86	.46	5.81
PLSP	2.6	0.1	3.74	14				
PERENNIAL FORBS	----	----	----	---				
*OPPO	80.5	4.0	-----	4				
TOTAL		3.6	100.00		43.68			209.67

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	195.0
OPPO	2.4
TOTAL	197.4

Precipitation Data:

R. G. #8 - Demer Exc.

October 15 to April 15	= 2.25
April 15 to July 1	= 3.29
July 1 to September 1	= 3.26
September 1 to October 15	= 0.73
Season Total	= 9.53
Long Term Average	= 7.98

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Demer Exclosure Outside Native 29 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	212.5	10.6	-----	10				
POSE	15.0	0.8	33.55	14	6.17	.44	.41	29.62
STCO	2.0	0.1	4.47	1	3.51	3.51	1.75	16.85
BOGR	16.0	0.8	36.03	8	4.18	.52	.26	20.06
SIHY	1.1	0.1	2.46	2	1.34	.67	1.22	6.43
ANNUAL GRASS	6.0	-----	-----	17	5.64	.33	.94	27.07
BRTE	4.9	0.2	10.96	15				
FEOC	1.1	0.1	2.46	11				
ANNUAL FORBS	4.6	-----	-----	15	4.40	.29	.96	21.12
PLSP	4.5	0.2	10.07	15				
SAKA	0.1	T	T	1				
PERENNIAL FORBS	-----	-----	-----	---				
*OPPO	43.0	2.2	-----	4				
TOTAL		2.3	100.00		25.24			121.15

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #8 - Demer Exc.		
October 15 to April 15	=	2.25
April 15 to July 1	=	3.29
July 1 to September 1	=	3.26
September 1 to October 15	=	0.73
Season Total	=	9.53
Long Term Average	=	7.98

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Dutch Nick Flat Exc. Inside Native 19 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occur-rences	Wgt./ Unit Basal Area	Pounds Per Acre
	A	B	C	E	F	G	H	I
EULA	65.0	0.3	1.95	2	23.74	11.87	.37	11.39
ORHY	1.5	T	T	3	2.91	.97	1.94	1.39
BOGR	3167.0	15.8	95.80	194	614.17	3.17	.19	294.80
POSE	54.4	0.3	1.63	49	36.01	.73	.66	17.28
FEOC	0.6	T	T	2	.09	.04	.15	.04
ANNUAL FORBS	34.9	----	----	168	100.92	.60	2.89	48.44
PLPA	20.6	0.1	.62	143				
LEDE	4.6	T	T	46				
LARE	8.9	T	T	49				
CHAL	0.2	T	T	2				
GIPU	0.5	T	T	5				
MATA	0.1	T	T	1				
PERENNIAL FORBS	0.1	----	----	1	.01	.01	.1	----
*OPPO	604.6	3.0	----	80				
SPCO	0.1	T	T	1				
TOTAL		16.5	100.00		777.85			373.34

* Not computed in percent composition
T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

OPPO	67.6
TOTAL	67.6

Precipitation Data:
R, G. #4 Dutch Nick Exclosure

October 15 to April 15	=	1.40
April 15 to July 1	=	3.54
July 1 to September 1	=	2.80
September 1 to October 15	=	.52
Season Total	=	8.26
Long Term Average	=	7.23

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Dutch Nick Flat Exc. Outside Native 19 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ARSP	12.0	0.1	.35	2	1.64	.82	.14	.79
EULA	22.0	0.1		2	13.96	6.98	.63	6.70
BOGR	3193.0	16.0	96.67	197	623.10	3.16	.19	299.08
POSE	57.5	0.3	1.72	57	33.48	.59	.06	16.07
SIHY	6.0	T	----	6	5.17	.86	.86	2.48
ANNUAL FORBS	51.7	----	----	180	122.00	.68	2.35	58.56
PLPA	31.5	0.2	.94	164				
MATA	2.2	T	----	14				
GIPU	1.4	T	----	14				
LEDE	5.8	T	----	58				
CHAL	0.2	T	----	2				
LARE	10.6	0.1	.32	55				
PERENNIAL FORBS	0.1	----	----	1	T			
*OPPO	770.1	3.9	----	79				
AST	0.1	T	T	1				
TOTAL		16.8	100.00		799.35			383.68

* Not computed in percent composition
T - Trace

Precipitation Data:
R. G. #4 Dutch Nick Exclosure

October 15 to April 15	=	1.40
April 15 to July 1	=	3.54
July 1 to September 1	=	2.80
September 1 to October 15	=	.52
Season Total	=	8.26
Long Term Average	=	7.23

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

West Pasture Exclosure Inside Native 18 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. Ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	506.2	2.5	44.24	107	127.61	1.19	.25	61.25
ARSP	161.3	0.8	13.93	29	13.17	.45	.08	6.32
ARPE	90.1	0.5	7.78	24	21.29	.89	.24	10.23
ORHY	69.9	0.4	6.04	41	228.00	5.56	3.26	109.44
SPCR	23.1	0.1	1.99	65	15.00	.23	.65	7.20
BOGR	0.5	T	T	1				
POSE	91.3	0.5	7.88	60	50.80	.85	.56	24.38
SIHY	70.4	0.4	6.08	93	92.84	.99	1.32	44.56
ANNUAL FORBS	141.5	----	----	198	327.12	1.65	2.31	157.02
MATA	103.2	0.5	8.91	192				
PLPA	26.9	0.1	2.32	113				
GIPU	1.7	T	T	17				
LEDE	9.6	0.1	.83	76				
LARE	0.1	T	T	1				
PERENNIAL FORBS	3.6	----	----	14	3.00	.21	.83	1.44
*OPPO	455.2	2.3	----	52				
MUDI	2.6	T	T	14				
MACA	1.0	T	T	1				
TOTAL		5.9	100.00		878.83			421.84

* Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #13 West Pasture Exclosure

October 15 to April 15	= 1.06
April 15 to July 1	= 3.43
July 1 to September 1	= 3.08
September 1 to October 15	= .34
Season Total	= 7.91
Long Term Average	= 6.97

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

West Pasture Exclosure Outside Native 18 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	578.4	2.9	53.28	101	128.56	1.27	.22	61.71
ARSP	62.7	0.3	5.59	27	8.26	.31	.13	3.96
ARPE	26.0	0.1	2.32	6	8.45	1.41	.33	4.06
ORHY	88.9	0.4	7.93	52	172.25	3.31	1.93	82.68
SPCR	25.0	0.1	2.23	53	10.26	.19	.41	4.92
SIHY	60.2	0.3	5.37	74	54.48	.74	.90	26.15
BOGR	21.0	0.1	1.87	5	10.14	2.03	.48	4.87
POSE	81.0	0.4	7.22	37	70.08	1.89	.87	33.64
AGCR	1.5	T	T	2	1.78	.89	1.18	.85
ANNUAL FORBS	170.8	----	----	194	299.88	1.55	1.76	143.94
MATA	104.3	0.5	9.29	178				
PLPA	55.0	0.3	4.90	57				
LARE	8.3	T	T	46				
GIPU	0.4	T	T	4				
LEDE	2.8	T	T	28				
PERENNIAL FORBS	6.1	----	----	28	3.95	.14	.65	1.89
*OPPO	381.0	1.9	----	41				
MACA	2.0	T	T	3				
MUDI	4.1	T	T	25				
TOTAL		5.4	100.00		768.09			368.67

* Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #13 West Pasture Exclosure

October 15 to April 15	=	1.06
April 15 to July 1	=	3.43
July 1 to September 1	=	3.08
September 1 to October 15	=	.34
Season Total	=	7.91
Long Term Average	=	6.97

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Bud Kimball Exclosure Inside-Native 24 July'38	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	264.0	13.2	----	16				
AGSM	16.6	0.8	36.36	16	57.95	3.62	3.49	278.16
STCO	0.5	T	T	1	2.53	2.53	5.06	12.14
POSE	24.6	1.2	54.54	17	34.34	2.02	1.39	164.83
SIHY	1.1	0.1	4.55	2	1.79	.89	1.63	8.59
ANNUAL FORBS	2.3	----	----	11	9.49	.86	4.13	45.55
PLSP	2.3	0.1	4.55	11				
PERENNIAL FORBS	0.8	----	----	4				
*PHHO	8.5	0.4	----	2				
*OPPO	5.0	0.3	----	1				
ERPU	0.8	T	T	4				
TOTAL		2.2	100.00		106.10			509.28

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

OPPO	16.0
ARTR	204.1
PHHO	23.3
TOTAL	243.4

Precipitation Data:

R. G. #41 - Bud Kimball Exc.

October 15 to April 15	= 2.44
April 15 to July 1	= 4.77
July 1 to September 1	= 3.43
September 1 to October 15	= 0.82
Season Total	= 11.46
Long Term Average	= 9.50

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Bud Kimball Exclosure Inside-Spray 24 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	0.5	T	----	1				
SIHY	3.0	0.2	3.69	2	7.03	3.52	2.34	33.74
AGSM	31.5	1.6	38.87	20	104.50	5.23	3.32	501.60
STCO	9.5	0.5	11.71	7	32.48	4.64	3.42	155.90
POSE	26.5	1.3	32.67	16	10.35	.65	.39	49.68
AGSP	3.0	0.2	3.69	1	6.73	6.73	2.24	32.30
ANNUAL GRASS	6.0	----	----	8	7.76	.97	1.29	37.25
BRTE	2.8	0.1	3.45	7				
FEOC	3.2	0.2	3.95	6				
ANNUAL FORBS	1.6	----	----	8	1.90	.24	1.19	9.12
PLSP	1.6	0.1	1.97	8				
PERENNIAL FORBS	----	----	----	---				
*OPPO	84.0	4.2	----	3				
*PHHO	6.0	0.3	----	3				
TOTAL		4.2	100.00		170.75			819.60

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #41 - Bud Kimball Exc.

October 15 to April 15	= 2.44
April 15 to July 1	= 4.77
July 1 to September 1	= 3.43
September 1 to October 15	= 0.82
Season Total	= 11.46
Long Term Average	= 9.50

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Bud Kimball Exclosure Outside Native 24 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	79.0	4.0	----	3				
AGSM	25.5	1.3	28.89	20	72.01	3.60	2.82	345.65
POSE	51.5	2.6	57.78	18	30.13	1.67	.58	144.62
FEOC	0.6	T	T	2	1.39	.69	2.32	6.67
SIHY	1.0	0.1	2.22	1	1.06	1.06	1.06	5.09
ANNUAL FORBS	10.0	----	----	19	20.18	1.06	2.02	96.86
PLSP	9.9	0.5	11.11	19				
SAKA	0.1	T	T	1				
PERENNIAL FORBS	0.4	----	----	4	1.30	.32	.33	6.24
*PHHO	8.6	0.4	----	7				
*OPPO	51.0	2.6	----	4				
ERPU	0.4	T	T	4				
TOTAL		4.5	100.00		126.07			605.14

* Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #41 - Bud Kimball Exc.

October 15 to April 15	= 2.44
April 15 to July 1	= 4.77
July 1 to September 1	= 3.43
September 1 to October 15	= 0.82
Season Total	= 11.46
Long Term Average	= 9.50

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Bud Kimball Exclosure Outside-Spray 24 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	25.0	1.3	----	1				
AGSM	16.6	0.8	26.67	16	37.55	2.35	2.26	180.24
AGSP	6.6	0.3	10.00	4	12.36	3.09	1.87	59.33
POSE	23.0	1.2	40.00	15	14.50	.97	.63	69.60
SIHY	0.5	T	T	1				
ANNUAL GRASS	6.7	0.3	10.00	10	8.62	.83	1.29	41.38
FEOC	6.2	0.3	10.00	10				
BRTE	0.5	T	T	1				
ANNUAL FORBS	7.9	----	----	17	13.93	.82	1.76	66.86
PLSP	7.6	0.4	13.33	17				
MATA	0.1	T	T	1				
SAKE	0.2	T	T	2				
PERENNIAL FORBS	----	----	----	---				
*PHHO	12.0	0.6	----	5				
*OPPO	26.1	1.3	----	4				
TOTAL		3.0	100.00		87.23			418.70

*Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #41 - Bud Kimball Exc.

October 15 to April 15	= 2.44
April 15 to July 1	= 4.77
July 1 to September 1	= 3.43
September 1 to October 15	= 0.82
Season Total	= 11.46
Long Term Average	= 9.50

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Smilo Exclosure Inside Native 29 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt. Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	123.7	6.2	----	8				
AGSM	8.8	0.4	36.37	14	8.97	.64	1.02	43.06
STCO	2.0	0.1	9.09	1	1.16	1.16	.58	5.57
SIHY	0.1	T	T	1	.51	.51	5.1	2.45
POSE	8.6	0.4	36.36	11	4.22	.38	.49	20.26
ANNUAL GRASS	0.8	----	----	6	.58	.09	.73	2.78
BRTE	0.2	T	T	2				
FEOC	0.6	T	T	6				
ANNUAL FORBS	3.2	----	----	16	3.93	.25	1.23	18.86
PLSP	3.2	0.2	18.18	16				
PERENNIAL FORBS	----	----	----	----				
*OPPO	41.0	2.1	----	2				
TOTAL		1.1	100.00		19.37			92.98

*Not computed in percent composition
T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	222.1
OPPO	13.8
TOTAL	235.9

Precipitation Data:
R. G. #36 Smilo Exclosure

October 15 to April 15	= 2.73
April 15 to July 1	= 2.68
July 1 to September 1	= 3.72
September 1 to October 15	= .19
Season Total	= 9.32
Long Term Avg.	= 8.58

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Smilo Exclosure Inside-Spray 29 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
POSE	3.6	0.2	5.88	5	3.05	.61	.84	14.64
AGSM	2.8	0.1	2.94	8	3.55	.44	1.27	17.04
SIHY	7.1	0.4	11.76	5	10.94	2.18	1.54	52.51
STCO	3.7	0.2	5.88	5	5.99	1.19	1.62	28.75
BOGR	5.0	0.3	8.82	2	10.48	5.24	2.09	50.30
ANNUAL GRASS	38.2	----	----	20	84.52	4.23	2.21	405.69
BRTE	35.0	1.8	52.96	20				
FEOC	3.2	0.2	5.88	16				
ANNUAL FORBS	3.9	----	----	15	3.84	.25	.98	18.43
PLSP	3.5	0.2	5.88	15				
SAKA	0.4	T	----	4				
TOTAL		3.4	100.00		122.37			587.38

T-Trace

Precipitation Data:

R. G. #36 Smilo Exclosure

October 15 to April 15	= 2.73
April 15 to July 1	= 2.68
July 1 to September 1	= 3.72
September 1 to October 15	= .19
Season Total	= 9.32
Long Term Avg.	= 8.58

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Smilo Exclosure Outside Native 7 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	323.0	16.2		13				
AGSM	4.9	0.2	11.76	12	6.08	.50	1.24	29.18
POSE	16.2	0.8	47.07	16	9.11	.56	.56	43.73
STCO	2.2	0.1	5.88	5	1.79	.36	.81	8.59
SIHY	0.5	T	T	1	.43	.43	.86	2.06
ANNUAL GRASS	5.5	----		10	6.17	.617	1.12	29.62
BRTE	4.6	0.2	11.76	5				
FEOC	0.9	0.1	5.88	9				
ANNUAL FORBS	5.5	----	----	16	5.01	.31	.91	24.05
PLSP	5.5	0.3	17.65	16				
PERENNIAL FORBS	0.2	----	----	2	.06	.03	.30	.29
*OPPO	12.0	0.6	----	1				
ERPU	0.2	T	T	2				
TOTAL		1.7	100.00		28.65			137.52

* Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #36 Smilo Exclosure

October 15 to April 15	= 2.73
April 15 to July 1	= 2.68
July 1 to September 1	= 3.72
September 1 to October 15	= .19
Season Total	= 9.32
Long Term Avg.	= 8.58

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Smilo Exclosure Outside-Spray 29 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	6.0	0.3	----	1				
POSE	18.6	0.9	26.47	14	6.27	.45	.34	30.09
STCO	1.2	0.1	2.94	4	1.20	.30	1.00	5.76
AGSM	2.4	0.1	2.94	8	4.66	.58	1.94	22.37
ANNUAL GRASS	35.6	----		20	52.11	2.61	1.46	250.13
BRTE	33.7	1.7	50.01	20				
FEOC	1.9	0.1	2.94	7				
ANNUAL FORBS	10.0	----	----	17	8.89	.52	.89	42.67
PLSP	9.5	0.5	14.70	16				
SAKA	0.5	T	T	5				
TOTAL		3.4	100.00		73.13			351.02

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #36 Smilo Exclosure

October 15 to April 15	= 2.73
April 15 to July 1	= 2.68
July 1 to September 1	= 3.72
September 1 to October 15	= .19
Season Total	= 9.32
Long Term Avg.	= 8.58

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 No. Plots 200

Cover Determined by Area Estimate

Two Mile Hill Exclosure Inside Native 24 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	904.0	4.5	70.27	124	287.77	2.32	.32	138.13
MAGL	2.1	T	----	2	2.06	1.02	.98	.98
POSE	49.1	0.2	3.76	48	37.00	.77	.75	17.76
SIHY	138.5	0.7	10.62	117	199.38	1.70	1.44	95.70
STCO	0.5	T	T	1	.04	.04	.08	.02
ORHY	4.0	T	T	3	8.46	2.82	2.12	4.06
ANNUAL GRASS	188.0	----	----	199	577.89	2.90	3.07	277.39
BRTE	62.6	0.3	4.79	149				
BRCO	125.4	0.6	9.61	198				
ANNUAL FORBS	5.7	----	----	53	1.36	.02	.24	.65
LEDE	3.3	T	T	29				
LARE	1.2	T	T	12				
CAMI	1.1	T	T	11				
HEPE	0.1	T	T	1				
PERENNIAL FORBS	12.4	----	----	43	32.91	.76	2.65	15.79
MACA	12.4	0.1	.95	43				
*OPPO	6.6	T	----	3				
TOTAL		6.3	100.00		1146.87			550.48

* Not computed in percent composition
T - Trace

Precipitation Data:
R. G. #39 Two Mile Hill Exclosure

October 15 to April 15	= 2.92
April 15 to July 1	= 4.82
July 1 to September 1	= 3.59
September 1 to October 15	= .89
Season Total	= 12.22
Long Term Average	= 10.61

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Two Mile Hill Exclosure Outside Native 24 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1664.5	8.3	93.30	128	675.85	5.28	.41	324.41
ORHY	6.5	T	T	5	5.45	1.09	.84	2.62
SIHY	28.6	0.1	1.59	58	31.34	.54	1.09	15.04
POSE	15.6	0.1	.86	11	11.08	1.01	.71	5.32
ANNUAL GRASS	37.0	----	----	120	145.90	1.22	3.94	70.03
BRTE	9.3	0.1	.52	61				
BRCO	27.6	0.1	1.53	80				
HOPU	0.1	T	T	1				
ANNUAL FORBS	30.5	----	----	127	82.51	.65	2.71	39.60
LARE	25.1	0.1	1.39	123				
HEPE	4.2	T	T	22				
LEDE	0.7	T	T	7				
CRE	0.5	T	T	1				
PERENNIAL FORBS	67.7	----	----	36	97.48	2.71	1.44	46.79
ALTE	0.1	T	T	1				
MUDI	0.1	T	T	1				
MACA	14.6	0.1	.81	28				
*OPPO	50.1	0.3	----	3				
VIVA	2.8	T	T	12				
TOTAL		8.9	100.00		1049.61			503.81

* Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #39 Two Mile Hill Exclosure

October 15 to April 15	= 2.92
April 15 to July 1	= 4.82
July 1 to September 1	= 3.59
September 1 to October 15	= .89
Season Total	= 12.22
Long Term Average	= 10.61

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Inside Native 30 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	322.0	16.1	----	14				
AGSM	15.9	0.8	24.24	20	46.78	2.34	2.94	224.54
POSE	37.1	1.9	57.58	19	22.16	1.16	.59	106.37
STCO	0.6	T	T	2	.20	.10	.33	.96
ANNUAL GRASS	8.3	----	----	12	6.65	.55	.80	31.92
BRTE	7.2	0.4	12.12	12				
FEOC	1.1	0.1	3.03	7				
ANNUAL FORBS	3.0	----	----	15	.91	.06	.30	4.37
PLSP	1.5	0.1	3.03	11				
LEDE	0.8	T	T	8				
GIPU	0.2	T	T	2				
LARE	0.1	T	T	1				
DRA	0.3	T	T	3				
DEPI	0.1	T	T	1				
PERENNIAL FORBS	0.5	----	----	4	.53	.13	1.06	2.54
*PHHO	13.5	0.7	----	5				
*OPPO	11.1	0.6	----	4				
ALTE	0.1	T	T	1				
CAAN	0.1	T	T	1				
SPCO	0.2	T	T	2				
ERPU	0.1	T	T	1				
TOTAL		3.3	100.00		77.23			370.70

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	278.5
PHHO	14.2
OPPO	24.3
TOTAL	317.0

Precipitation Data:

R. G. #76 - Cochran Exc.

October 15 to April 15	= 3.31
April 15 to July 1	= 4.66
July 1 to September 1	= 2.77
September 1 to October 15	= .70
Season Total	= 11.44
Long Term Average	= 10.67

*Not computed in percent composition
T - Trace

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Inside-Spray 30 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	270.0	13.5	----	14				
AGSM	15.9	0.8	33.14	18	52.67	2.93	3.31	252.82
POSE	17.1	0.9	34.96	14	13.69	.98	.80	65.71
ANNUAL GRASS	12.5	----	----	17	18.55	1.09	1.48	89.04
BRTE	10.7	0.5	21.88	16				
FEOC	1.8	0.1	3.68	14				
ANNUAL FORBS	3.3	----	----	14	1.30	.09	.39	6.24
LEDE	2.0	0.1	4.09	12				
PLSP	1.1	0.1	2.25	11				
DEPI	0.2	T	T	2				
PERENNIAL FORBS	0.1	----	----	1	.10	.10	1.00	.48
*OPPO	6.0	0.3	----	2				
ERPU	0.1	T	T	1				
*PHHO	0.7	T	----	3				
TOTAL		2.5	100.00		86.31			414.29

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #76 - Cochran Exc.

October 15 to April 15	= 3.31
April 15 to July 1	= 4.66
July 1 to September 1	= 2.77
September 1 to October 15	= 0.70
Season Total	= 11.44
Long Term Average	= 10.67

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Inside-Pitted 30 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	82.0	4.1	----	5				
AGCR	41.0	2.1	51.88	16	91.97	5.75	2.24	441.46
AGSM	4.3	0.2	5.39	9	7.73	.85	1.79	37.10
STCO	1.0	0.1	1.25	1	.49	.49	.49	2.35
POSE	25.6	1.3	32.08	17	3.31	.19	.13	15.89
ANNUAL GRASS	6.3	----	----	17	7.52	.44	1.19	36.09
FEOC	3.6	0.2	4.51	16				
BRTE	2.6	0.1	3.26	13				
BRCO	0.1	T	T	1				
ANNUAL FORBS	1.6	----	----	11	.47	.04	.29	2.25
PLSP	1.3	0.1	1.63	9				
LARE	0.1	T	T	1				
DRA	0.1	T	T	1				
LEDE	0.1	T	T	1				
PERENNIAL FORBS	----	----	----	---				
*OPPO	29.0	1.5	----	2				
TOTAL		4.1	100.00		111.49			535.15

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #76 - Cochran Exc.	
October 15 to April 15	= 3.31
April 15 to July 1	= 4.66
July 1 to September 1	= 2.77
September 1 to October 15	= 0.70
Season Total	= 11.44
Long Term Average	= 10.67

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Inside-Cultivated 30 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	194.0	9.7	----	11				
SIHY	1.0	0.1	1.33	1	.44	.44	.44	2.11
AGSM	19.8	1.0	26.29	20	58.71	2.94	2.96	281.81
BOGR	12.0	0.6	15.93	2	2.13	1.06	.18	10.22
POSE	22.1	1.1	30.29	15	12.11	.81	.55	58.13
ANNUAL GRASS	17.0	----	----	20	35.21	1.76	2.07	169.01
BRTE	14.9	0.7	19.79	20				
FEOC	2.1	0.1	2.79	8				
ANNUAL FORBS	3.2	----	----	12	1.09	.09	.34	5.23
LEDE	1.1	0.1	1.46	11				
PLSP	1.6	0.1	2.12	8				
LARE	0.2	T	T	2				
GIPU	0.1	T	T	1				
DRA	0.2	T	T	2				
PERENNIAL FORBS	0.2	----	----	2	.05	.02	.25	.24
SPCO	0.1	T	T	1				
*OPPO	27.0	1.4	----	2				
ERPU	0.1	T	T	1				
TOTAL		3.8	100.00		109.74			526.75

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G #76 - Cochran Exc.

October 15 to April 15	= 3.31
April 15 to July 1	= 4.66
July 1 to September 1	= 2.77
September 1 to October 15	= 0.70
Season Total	= 11.44
Long Term Average	= 10.67

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Outside-Native 30 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	46.0	2.3	----	7				
POSE	29.0	1.5	53.58	16	17.69	1.11	.61	84.91
AGSM	19.1	1.0	35.71	20	27.83	1.39	1.46	133.58
ANNUAL GRASS	2.8	----	----	14	1.38	.09	.49	6.62
FEOC	0.8	T	T	8				
BRTE	2.0	0.1	3.57	12				
ANNUAL FORBS	3.9	----	----	15	2.37	.16	.61	11.38
DRA	0.1	T	T	1				
LEDE	1.1	0.1	3.57	11				
PLSP	1.9	0.1	3.57	11				
LARE	0.5	T	T	5				
DEPI	0.3	T	T	3				
PERENNIAL FORBS	0.1	----	----	1	.12	.12	1.20	.57
*OPPO	0.1	T	----	1				
*PHHO	3.5	0.2	----	4				
SPCO	0.1	T	T	1				
TOTAL		2.8	100.00		49.39			237.07

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #76 - Cochran Exc.

October 15 to April 15	= 3.31
April 15 to July 1	= 4.66
July 1 to September 1	= 2.77
September 1 to October 15	= 0.70
Season Total	= 11.44
Long Term Average	= 10.67

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cochran Exclosure Outside-Spray 30 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	22.0	1.1	----	2				
POSE	46.5	2.3	64.89	20	34.48	1.72	.74	165.50
AGSM	17.7	0.9	24.27	20	51.77	2.59	2.92	248.49
AGSP	2.5	0.1	3.43	2	4.93	2.46	1.97	23.66
SIHY	0.1	T	T	1	.40	.40	4.00	1.92
ANNUAL GRASS	4.3	----	----	14	2.83	.20	.66	13.58
BRTE	3.3	0.2	4.53	12				
FEOC	1.0	0.1	1.37	6				
ANNUAL FORBS	1.8	----	----	10	.98	.09	.54	4.70
CAMI	0.1	T	T	1				
PLSP	1.1	0.1	1.51	7				
LEDE	0.5	T	T	5				
DEPI	0.1	T	T	1				
PERENNIAL FORBS	----	----	----	---				
*OPPO	42.1	2.1	----	3				
TOTAL		3.7	100.00		95.39			457.87

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #76 - Cochran Exc.

October 15 to April 15	= 3.31
April 15 to July 1	= 4.66
July 1 to September 1	= 2.77
September 1 to October 15	= 0.70
Season Total	= 11.44
Long Term Average	= 10.67

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kirby Creek Exclosure Inside Native 23 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*SAVE	92.0	4.6	----	7				
BRTE	23.3	1.2	52.68	16	44.43	2.78	1.91	213.26
POSE	4.0	0.2	8.93	3	3.32	1.11	.83	15.94
AGSM	3.0	0.2	6.70	3	5.54	1.85	1.85	26.59
ANNUAL FORBS	14.5	----	----	20	16.05	.80	1.11	77.04
LEDE	14.2	0.7	31.69	20				
SAKA	0.2	T	T	2				
LARE	0.1	T	T	1				
TOTAL		2.3	100.00		69.34			332.83

Production Estimates of Shrubs and Woody Mat Form Plants

SAVE	231.9
OPPO	1.3
ARTR	2.9
TOTAL	236.1

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #77 - Kirby Creek Exc.

October 15 to April 15	=	3.28
April 15 to July 1	=	4.25
July 1 to September 1	=	2.36
September 1 to October 15	=	0.51
Season Total	=	8.04
Long Term Average	=	9.10

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kirby Creek Exclosure Outside Native 23 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*SAVE	169.5	8.5	----	10				
BRTE	13.0	0.7	36.94	16	13.80	.86	1.06	66.24
AGSM	5.0	0.3	14.20	4	17.47	4.36	3.49	83.86
SPAI	2.0	0.1	5.68	1	2.76	2.76	1.38	13.25
ANNUAL FORBS	15.2	----	----	16	14.88	.93	.98	71.42
LEPE	8.6	0.4	24.43	13				
CHE	6.6	0.3	18.75	4				
TOTAL		1.8	100.00		48.91			234.77

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #77 - Kirby Creek Exc.

October 15 to April 15	=	3.28
April 15 to July 1	=	4.25
July 1 to September 1	=	2.36
September 1 to October 15	=	0.51
Season Total	=	8.04
Long Term Average	=	9.10

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

North Butte-Thermop. Relic Native 20 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	118.0	5.9	----	6				
AGSP	31.7	1.6	50.62	19	70.27	3.69	2.22	337.29
STCO	8.0	0.4	12.19	5	9.86	1.97	1.23	47.33
POSE	3.6	0.2	5.49	7	2.01	.29	.56	9.65
KOCR	1.0	0.1	1.52	1	.21	.21	.21	1.01
BOGR	0.5	T	T	1	.10	.10	.02	.48
CAFI	18.1	0.9	27.59	7	10.21	1.46	.56	49.01
ANNUAL FORBS	0.1	----	----	1	.01	.01	.1	.05
PLPA	0.1	T	T	1				
PERENNIAL FORBS	2.6	----	----	10	2.96	.29	1.14	14.21
ALTE	0.2	T	T	2				
SPCO	1.7	0.1	2.59	9				
*PHHO	8.0	0.4	----	5				
*OPPO	5.1	0.3	----	2				
ARHO2	0.6	T	T	2				
ERPU	0.1	T	T	1				
TOTAL		3.3	100.00		95.63			459.03

* Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	69.2
OPPO	14.7
PHHO	7.1
TOTAL	91.0

Precipitation Data:
Thermopolis 2 Weather Bureau Station

Ocotober 15 to April 15	= 3.91
April 15 to July 1	= 6.38
July 1 to September 1	= 2.93
September 1 to October 15	= .86
Season Total	= 14.08
Long Term Avg.	= 11.01

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Round Top Mountain Relic Native 30 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	168.0	8.4	----	6				
*GUSA	0.5	T	----	1				
AGSP	44.1	2.2	54.56	16	106.73	6.67	2.42	512.30
STCO	6.0	0.3	7.27	2	9.35	4.67	1.56	44.88
POSE	8.5	0.4	10.30	11	2.74	.25	.32	13.15
KOCR	2.0	0.1	2.42	2	1.73	.86	.86	8.30
BRTE	0.6	T	T	2	1.11	.55	1.85	5.33
CAFI	21.0	1.1	25.45	9	9.33	1.04	.44	44.78
ANNUAL FORBS	0.1	----	----	2	.02	.01	.10	.09
LARE	0.1	T	T	1				
OECO	0.1	T	T					
PERENNIAL FORBS	0.2	----	----	2	.09	.04	.90	.43
ALTE	0.1	T	T					
*PHHO	5.0	0.3	----	1				
TOTAL		4.1	100.00		131.10			624.26

* Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	10.5
TOTAL	10.5

Precipitation Data:
Thermopolis 2 Weather Bureau Station

October 15 to April 15	= 3.91
April 15 to July 1	= 6.38
July 1 to September 1	= 2.93
September 1 to October 15	= .86
Season Total	= 14.08
Long Term Avg.	= 11.01

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Sand Gulch Exclosure Inside Native 20 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1001.0	5.0	64.55	84	415.37	4.94	.41	199.38
*ARTR	231.0	1.2	----	7				
SIHY	9.3	0.1	.59	12	13.95	1.16	1.50	6.69
BRTE	334.3	1.7	21.38	183	600.15	3.28	1.79	288.07
AGSM	191.9	1.0	12.27	137	364.62	2.66	1.90	175.02
POSE	5.5	T	T	8	3.56	.45	.64	1.71
BOGR	12.0	0.1	.76	1	9.16	9.16	.76	4.39
MUSQ	1.0	T	T	2	----			
ANNUAL FORBS	8.8	----	----	67	2.35	.03	.27	1.13
LEDE	7.0	T	.45	58				
LARE	0.6	T	T	6				
EUSE	0.3	T	T	3				
CAMI	0.4	T	T	4				
PLPA	0.5	T	T	5				
PERENNIAL FORBS	----	----	----	----				
*OPPO	54.0	0.3	----	9				
TOTAL		8.0	100.00		1409.16			676.39

* Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #75 Sand Gulch Exclosure

October 15 to April 15	= 2.69
April 15 to July 1	= 4.61
July 1 to September 1	= 2.54
September 1 to October 15	= .68
Season Total	= 10.52
Long Term Average	= 9.45

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Sand Gulch Exclosure Outside Native 23 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	298.0	1.5	30.84	49	132.41	2.70	.44	63.56
POSE	19.0	0.1	1.96	15	11.56	.77	.61	5.55
SPAI	4.2	T	T	5	10.83	2.17	2.57	5.19
BRTE	403.7	2.0	43.56	199	1144.04	5.75	2.84	549.14
AGSM	24.3	0.1	2.51	49	44.39	.91	1.83	21.31
BOGR	181.6	0.9	18.79	70	53.73	.77	.29	25.79
AGCR	3.6	T	T	4	6.65	1.66	1.85	3.19
MUSQ	1.3	T	T	4	.10	.02	.07	.05
ANNUAL FORBS	30.3	----	----	111	29.18	.26	.96	14.01
LEDE	5.7	T	T	53				
SAKA	0.5	T	T	5				
PLPA	0.2	T	T	2				
LARE	9.7	0.1	1.17	56				
PLSP	11.3	0.1	1.17	65				
CHAL	1.7	T	T	13				
GIPU	0.3	T	T	3				
EUSE	0.2	T	T	2				
MATA	0.7	T	T	3				
PERENNIAL FORBS	0.2	----	----	2	.02	.01	.1	.01
SPCO	0.1	T	T	1				
*OPPO	818.5	4.1	----	53				
AST	0.1	T	T	1				
TOTAL		4.8	100.00		1432.91			687.79

* Not computed in percent composition
T - Trace

Precipitation Data:

R. G. #75 Sand Gulch Exclosure

October 15 to April 15	= 2.69
April 15 to July 1	= 4.61
July 1 to September 1	= 2.54
September 1 to October 15	= .68
Season Total	= 10.52
Long Term Average	= 9.45

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Exclosure #1 Inside Native 8 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	2389.4	11.9	92.97	139	855.17	6.15	.36	410.48
ARSP	108.5	0.5	3.91	17	7.84	.46	.07	3.76
SIHY	34.6	0.2	1.56	26	20.74	.79	.59	9.96
POSE	48.0	0.2	1.56	13	9.61	.74	.20	4.61
ANNUAL FORBS	12.3	----	----	39	17.70	.45	1.44	8.50
HAGL	0.7	T	T	7				
LARE	7.5	T	T	25				
GIPU	0.4	T	T	4				
LEDE	0.6	T	T	6				
UNK	0.1	T	T	1				
OESC	2.0	T	T	3				
DEPI	0.8	T	T	4				
SAKA	0.1	T	T	1				
OEN	0.1	T	T	1				
PERENNIAL FORBS	0.9	----	----	5	.13	.03	.14	.06
*OPPO	0.1	T	----	1				
AST	0.7	T	T	3				
ALTE	0.2	T	T	2				
TOTAL		12.8	100.00		911.19			437.37

* Not computed in percent composition
T - Trace

Precipitation Data:
R. G. #24 Halogeton Exclosure #1

October 15 to April 15	=	.95
April 15 to July 1	=	3.09
July 1 to September 1	=	1.43
September 1 to October 15	=	.61
Season Total	=	6.08
Long Term Average	=	5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Exclosure #2 Inside Native 9 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences	Wgt./ Unit Basal Area	Pounds Per Acre
	A	B	C	E	F	G	H	I
						F ÷ E	F ÷ E	F x .48
ATNU	2139.2	10.7	88.53	173	631.91	3.65	.29	303.32
ARSP	2.1	T	T	3	.68	.23	.32	.33
SIHY	127.5	0.6	5.26	76	235.82	3.10	1.85	113.19
POSE	145.4	0.7	5.99	66	85.52	1.29	.58	41.05
ANNUAL FORBS	8.6	----	----	42	17.75	.42	2.06	8.52
DEPI	0.6	T	T	2				
LARE	5.4	T	.22	25				
LEDE	0.7	T	T	7				
GIPU	0.3	T	T	3				
HAGL	0.7	T	T	7				
EUSE	0.8	T	T	8				
UNK	0.1	T	T	1				
PERENNIAL FORBS	2.6	----	----	14	.64	.04	.25	.31
OECA	1.5	T	T	7				
ALTE	1.1	T	T	11				
*OPPO	28.5	0.1	----	4				
TOTAL		12.0	100.00		972.32			466.72

* Not computed in percent composition
T - Trace

Precipitation Data:
R. G. #24 Halogeton Exclosure #2

October 15 to April 15	=	.95
April 15 to July 1	=	3.09
July 1 to September 1	=	1.43
September 1 to October 15	=	.61
Season Total	=	6.08
Long Term Average	=	5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Exclosure #3 Inside Native 10 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	2097.9	10.5	97.66	158	830.87	5.26	.39	398.82
SIHY	27.4	0.1	1.26	27	72.58	2.69	2.65	34.84
POSE	0.1	T	T	1	.01	.01	.10	----
ANNUAL FORBS	42.6	----	----	119	109.47	.92	2.57	52.55
EUSE	2.7	T	T	23				
DEPI	0.1	T	T	1				
LEDE	2.2	T	T	10				
GIPU	7.2	T	T	19				
MATA	5.1	T	T	13				
LARE	23.5	0.1	1.08	82				
HAGL	1.6	T	T	16				
SAKA	0.2	T	T	2				
PERENNIAL FORBS	3.9	----	----	4	.79	.19	.20	.38
OECA	0.6	T	T	2				
ALTE	3.3	T	T	29				
*OPPO	37.0	0.2	----	2				
TOTAL		10.7	100.00		1013.72			486.59

* Not computed in percent composition
T - Trace

Precipitation Data:
R. G. #24 Halogeton Exclosure #3

October 15 to April 15	= .95
April 15 to July 1	= 3.09
July 1 to September 1	= 1.43
September 1 to October 15	= .61
Season Total	= 6.08
Long Term Average	= 5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Pasture #1 Outside Native 17 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1994.2	10.0	100.00	138	941.65	6.82	.47	451.99
ARSP	1.5	T	T	2	.85	.43	.57	.41
SIHY	0.6	T	T	2	.95	.47	1.58	.47
ANNUAL FORBS	19.3	----	----	120	51.93	.43	2.69	24.93
EUSE	0.7	T	T	7				
DEPI	3.5	T	T	15				
LARE	2.3	T	T	19				
GIPU	2.0	T	T	20				
HAGL	6.9	T	T	60				
LEDE	3.8	T	T	38				
LUPU	0.1	T	T	1				
SAKA	0.1	T	T	1				
PERENNIAL FORBS	2.4	----	----	7	2.07	.29	.86	.99
ALTE	0.2	T	T	2				
*OPPO	138.4	0.7	----	17				
OEAL	2.1	T	T	4				
TOTAL		10.0	100.00		997.45			478.79

* Not computed in percent composition
T - Trace

Precipitation Data:
R. G. #24 Halogeton Pasture #1

October 15 to April 15	=	.95
April 15 to July 1	=	3.09
July 1 to September 1	=	1.43
September 1 to October 15	=	.61
Season Total	=	6.08
Long Term Average	=	5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Pasture #2 Outside Native 17 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1404.6	7.0	99.36	108	598.50	5.54	.43	287.28
ANNUAL FORBS	11.6	----	----	63	29.95	.48	2.58	14.38
LARE	9.0	0.1	.64	51				
DEPI	1.5	T	T	11				
LEDE	0.1	T	T	1				
GIPU	0.3	T	T	3				
HAGL	0.7	T	T	7				
PERENNIAL FORBS	0.1	----	----	1	.01	.01	.1	----
ALTE	0.1	T	T	1				
*OPPO	3.0	T	----	1				
TOTAL		7.1	100.00		628.46			301.66

* Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #24 Halogeton Pasture #2

October 15 to April 15	= .95
April 15 to July 1	= 3.09
July 1 to September 1	= 1.43
September 1 to October 15	= .61
Season Total	= 6.08
Long Term Average	= 5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Pasture #4A Outside Native 16 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1567.1	7.8	98.58	151	687.77	4.55	.44	330.13
SIHY	9.4	0.1	.59	8	28.91	3.61	3.07	13.88
POSE	6.0	T	T	2	15.65	7.83	2.61	7.51
ANNUAL FORBS	22.2	----	----	105	75.02	.72	3.37	36.01
LEDE	5.5	T	T	43				
GIPU	0.5	T	T	5				
LARE	13.4	0.1	.83	78				
HAGL	1.1	T	T	7				
DEPI	0.8	T	T	8				
MATA	0.8	T	T	4				
EUSE	0.1	T	T	1				
PERENNIAL FORBS	1.8	----	----	17	.26	.01	.14	.12
OECA	0.3	T	T	3				
ALTE	1.4	T	T	14				
*OPPO	3.0	T	----	1				
*PHHO	0.1	T	----	1				
CYMO	0.1	T	T	1				
TOTAL		8.0	100.00		807.61			387.65

* Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #24 Halogeton Pasture #4A

October 15 to April 15	= .95
April 15 to July 1	= 3.09
July 1 to September 1	= 1.43
September 1 to October 15	= .61
Season Total	= 6.08
Long Term Average	= 5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Pasture #4B Outside Native 16 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1691.3	8.5	97.12	180	785.92	4.36	.46	377.24
ARSP	10.0	0.1	.57	1	3.98	3.98	.39	1.91
SIHY	0.6	T	T	2	.27	.13	.45	.13
ANNUAL FORBS	44.8	----	----	177	124.53	.70	2.78	59.77
HAGL	18.6	0.1	1.06	125				
LARE	12.3	0.1	.70	74				
LEDE	9.6	0.1	.55	84				
GIPU	3.7	T	T	37				
MATA	0.1	T	T	1				
EUSE	0.1	T	T	1				
DEPI	0.4	T	T	4				
PERENNIAL FORBS	0.7	----	----	3	.26	.08	.37	.12
OECA	0.2	T	T	2				
*OPPO	23.7	0.1	----	6				
CYMO	0.5	T	T	1				
TOTAL		9.0	100.00		914.96			439.17

* Not used in computing percent composition

T - Trace

Precipitation Data:
R. G. #24 Halogeton Pasture #4B

October 15 to April 15	= .95
April 15 to July 1	= 3.09
July 1 to September 1	= 1.43
September 1 to October 15	= .61
Season Total	= 6.08
Long Term Average	= 5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Pasture #5 Outside Native 16 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1522.8	7.6	93.40	178	622.33	3.49	.41	298.71
ARSP	62.6	0.3	3.79	7	3.97	.57	.06	1.91
SIHY	30.8	0.2	1.86	36	48.90	1.36	1.58	23.47
ANNUAL FORBS	31.7	----	----	147	110.66	.75	3.49	53.12
LARE	15.7	0.1	.95	88				
LEDE	5.6	T	T	52				
GIPU	2.8	T	T	24				
HAGL	4.3	T	T	43				
EUSE	2.4	T	T	24				
DEPI	0.9	T	T	9				
PERENNIAL FORBS	3.3	----	----	33	.67	----	.20	.32
OECA	0.8	T	T	8				
*OPPO	2.1	T	T	2				
ALTE	2.5	T	T	25				
TOTAL		8.2	100.00		786.53			377.53

* Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #24 Halogeton Pasture #5

October 15 to April 15	= .95
April 15 to July 1	= 3.09
July 1 to September 1	= 1.43
September 1 to October 15	= .61
Season Total	= 6.08
Long Term Average	= 5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Pasture #6 Outside Native 17 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occur-rences	Wgt./ Unit Basal Area	Pounds Per Acre
	A	B	C	E	F	G	H	I
						F ÷ E	F ÷ E	F x .48
ATNU	1379.5	6.9	94.63	91	568.90	6.25	.41	273.07
SIHY	8.3	T	.57	30	6.35	.21	.77	3.05
ANNUAL FORBS	75.0	----	----	174	346.01	1.98	4.61	166.08
MATA	22.7	0.1	1.55	58				
LARE	31.5	0.2	2.15	145				
LEDE	2.2	T	T	18				
GIPU	8.4	T	.57	64				
HAGL	7.8	T	.53	62				
EUSE	1.6	T	T	16				
DEPI	0.5	T	T	5				
PLPA	0.3	T	T	3				
PERENNIAL FORBS	1.6	----	----	15	.06	----	.04	.03
OECA	0.6	T	T	6				
*OPPO	10.0	0.1	----	3				
ALTE	1.0	T	T	10				
TOTAL		7.2	100.00		921.32			442.23

* Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #24 Halogeton Pasture #6

October 15 to April 15	= .95
April 15 to July 1	= 3.09
July 1 to September 1	= 1.43
September 1 to October 15	= .61
Season Total	= 6.08
Long Term Average	= 5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 — No. Plots 200

Cover Determined by Area Estimate

Halogeton Pasture #7A Outside Native 16 July '68	Total Trans. Basal Area Percent	Average Percent Compo-sition	Percent Compo-sition	Absolute Plot Frequency %Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1345.3	6.7	95.91	106	593.43	5.59	.44	284.85
SIHY	0.3	T	----	3	.05	.02	.16	.02
ORHY	0.6	T	----	2	.48	.24	.80	.23
ANNUAL FORBS	58.6	----	----	139	160.63	1.15	2.74	77.10
MATA	13.4	0.1	.95	26				
LARE	29.6	0.2	2.10	95				
HAGL	4.6	T	.33	34				
SAKA	0.2	T	T	2				
GIPU	6.8	T	.48	31				
EUSE	1.9	T	T	19				
PLPA	0.7	T	T	3				
LEDE	0.7	T	T	7				
DEPI	0.7	T	T	3				
PERENNIAL FORBS	3.9	----	----	35	.24	----	.06	.12
OECA	0.7	T	T	7				
*OPPO	0.1	T	T	1				
ALTE	3.2	T	.23	28				
TOTAL		7.0	100.00		754.83			362.32

* Not computed in percent composition

T- Trace

Precipitation Data:
R. G. #24 Halogeton Pasture #7A

October 15 to April 15	= .95
April 15 to July 1	= 3.09
July 1 to September 1	= 1.43
September 1 to October 15	= .61
Season Total	= 6.08
Long Term Average	= 5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 10 No. Plots 200

Cover Determined by Area Estimate

Halogeton Pasture #7B Outside Native 16 July '68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 200	Total Weight Gms/200 /Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x .48
	A	B	C	E	F	G	H	I
ATNU	1726.3	8.6	95.58	143	707.47	4.95	.41	339.58
ARSP	6.0	T	.33	2	.23	.12	.04	.11
SIHY	13.1	0.1	.72	22	21.81	.99	1.66	10.47
ANNUAL FORBS	66.8	----	----	151	255.88	1.69	3.83	122.82
MATA	46.6	0.2	2.57	124				
LEDE	2.5	T	T	25				
LARE	5.9	T	.33	43				
DEPI	0.6	T	T	6				
GIPU	2.5	T	T	17				
HAGL	8.6	T	.47	7				
LUPU	0.1	T	T	1				
SAKA	0.1	T	T	1				
PERENNIAL FORBS	2.7	----	----	25	.70	.03	.25	.34
OECA	0.8	T	T	18				
ALTE	1.8	T	T	8				
*OPPO	37.6	0.2	----	11				
TOTAL		8.9	100.00		986.09			473.32

* Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #24 Halogeton Pasture #7B

October 15 to April 15	= .95
April 15 to July 1	= 3.09
July 1 to September 1	= 1.43
September 1 to October 15	= .61
Season Total	= 6.08
Long Term Average	= 5.28

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Horsecreek Exclosure Inside AGSM 27 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	163.0	8.2	----	11				
AGSM	43.0	2.2	73.33	20	150.91	7.54	3.51	724.37
POSE	16.0	0.8	26.67	15	10.04	.67	.63	48.19
BRTE	0.1	T	T	1	.01	.01	.10	.05
ANNUAL FORBS	0.1	----	----	1	.01	.01	.10	.05
CHAL	0.1	T	T	1				
PERENNIAL FORBS	0.1	----	----	1	.01	.01	.10	.05
CRE	0.1	T	T	1				
TOTAL		3.0	100.00		160.98			772.70

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #12 - Horsecreek Exc.

October 15 to April 15	= 3.34
April 15 to July 1	= 7.84
July 1 to September 1	= 5.32
September 1 to October 15	= 1.68
Season Total	= 18.18
Long Term Average	= 12.07

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Horsecreek Exclosure Inside AGSP 27 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	69.0	3.5	----	6				
AGSP	57.7	2.9	93.54	19	142.30	7.49	2.46	683.04
POSE	3.6	0.2	6.46	5	.95	.19	.26	4.56
AGSM	0.2	T	T	2	.46	.23	2.30	2.21
PERENNIAL FORBS	0.7	----	----	3	.57	.19	.81	2.74
*OPPO	10.0	0.5	----	1				
*PHHO	6.6	0.3	----	6				
SPCO	0.7	T	T	3				
TOTAL		3.1	100.00		144.28			692.55

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #12 - Horsecreek Exc.

October 15 to April 15	= 3.34
April 15 to July 1	= 7.84
July 1 to September 1	= 5.32
September 1 to October 15	= 1.68
Season Total	= 18.18
Long Term Average	= 12.07

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Horsecreek Exclosure Outside AGSM 27 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	210.0	10.5	-----	11				
AGSM	20.0	1.0	55.56	20	42.53	2.13	2.13	204.14
AGSP	8.1	0.4	22.22	8	13.44	1.68	1.66	64.51
POSE	8.1	0.4	22.22	6	1.89	.32	.23	9.07
BRCO	0.5	T	T	1	.63	.63	1.26	3.02
ANNUAL FORBS	0.2	----	----	2	.04	.02	.20	.19
SAKA	0.2	T	T	2				
PERENNIAL FORBS	0.6	----	----	1	.34	.34	.56	1.63
*OPPO	6.5	0.3	----	2				
*PHHO	13.0	0.7	-----	10				
SPCO	0.1	T	T	1				
VIVA	0.5	T	T	1				
TOTAL		1.8	100.00		58.87			282.56**

*Not computed in percent composition

T - Trace

**Reflects approximate utilization of 3% at time of clipping (corrected to 289.63 lbs.)

Precipitation Data:

R. G. #12 - Horsecreek Exc.

October 15 to April 15	= 3.34
April 15 to July 1	= 7.84
July 1 to September 1	= 5.32
September 1 to October 15	= 1.68
Season Total	= 18.18
Long Term Average	= 12.07

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — *No. Plots 20

Cover Determined by Area Estimate

Horsecreek Exlcosure Outside AGSP 27 July'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	203.1	10.2	----	13				
GUSA	45.7	2.3	54.76	11	31.04	2.82	.68	148.99
AGSM	14.1	0.7	16.67	13	35.17	2.71	2.49	168.82
AGSP	14.1	0.7	16.67	11	37.38	3.39	2.65	179.42
POSE	9.0	0.5	11.90	10	3.56	.35	.39	17.08
BRTE	0.1	T	T	1	.05	.05	.50	.24
ANNUAL FORBS	0.5	----	----	1	.13	.13	.26	.62
CHAL	0.5	T	T	1				
PERENNIAL FORBS	0.3	----	----	3	.21	.07	.70	1.01
*PHHO	5.6	0.3	----	6				
CIR	0.1	T	T	1				
SPCO	0.2	T	T	2				
TOTAL		4.2	100.00		107.54			516.19**

*Not computed in percent composition

T - Trace

**Reflects approximate utilization of 3% at time of clipping (corrected to 530.79 lbs.)

Precipitation Data:

R. G. #12 - Horsecreek Exc.

October 15 to April 15	= 3.34
April 15 to July 1	= 7.84
July 1 to September 1	= 5.32
September 1 to October 15	= 1.68
Season Total	= 18.18
Long Term Average	= 12.07

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 No. Plots 20

Cover Determined by Area Estimate

Kane Deer Exclosure Inside-Native 16 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*JUOS	105.0	5.3	----	2				
AGSP	2.0	0.1	17.54	1	2.24	2.24	1.12	10.75
AGGR	8.0	0.4	71.05	3	7.23	2.41	.90	34.70
POSE	0.5	T	4.39	1	.60	.60	.12	2.88
ANNUAL FORBS	0.3	----	----	3	1.42	.47	4.73	6.82
GIL	0.3	T	2.63	3				
PERENNIAL FORBS	0.6	----	----	2	.39	.19	.65	1.87
ANDI	0.1	T	T	1				
*PHHO	4.0	0.2	----	2				
*OPPO	5.0	0.3	----	1				
AST	0.5	T	4.39	1				
TOTAL		0.5	100.00		11.88			57.02

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #21 - Kane Deer Exc.

October 15 to April 15	= 4.32
April 15 to July 1	= 6.45
July 1 to September 1	= 3.70
September 1 to October 15	= 1.45
Season Total	= 15.92
Long Term Average	= 12.30

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kane Deer Exclosure Inside-Spray 16 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARNO	35.0	1.8	----	2				
AGSP	13.5	0.7	46.71	6	28.90	4.82	2.14	138.72
POSE	2.0	0.1	6.66	1	.47	.47	.24	2.26
AGGR	4.0	0.2	13.33	2	2.97	1.48	.74	14.26
STCO	2.0	0.1	6.66	1	1.29	1.29	.65	6.19
ANNUAL FORBS	3.0	----	----	7	6.19	.88	2.06	29.71
GIL	1.2	0.1	6.66	3				
LATE	0.1	T	T	1				
DEPI	1.6	0.1	6.66	4				
HAGL	0.1	T	T	1				
PERENNIAL FORBS	4.2	----	----	7	3.45	.49	.82	16.56
ANDI	2.0	0.1	6.66	3				
PHHO	1.2	0.1	6.66	3				
LEAL	0.1	T	T	1				
ARHO2	0.3	T	T	3				
PASE	0.6	T	T	2				
TOTAL		1.5	100.00		43.27			207.70

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #21 - Kane Deer Exc.

October 15 to April 15	= 4.32
April 15 to July 1	= 6.45
July 1 to September 1	= 3.70
September 1 to October 15	= 1.45
Season Total	= 15.92
Long Term Average	= 12.30

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kane Deer Exclosure Outside-Native 16 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*JUOS	467.0	23.4	----	13				
AGSP	4.5	0.2	29.65	2	1.31	.65	.29	6.29
POSE	1.5	0.1	9.87	2	.84	.42	.56	4.03
ANNUAL FORBS	0.5	----	----	1	.42	.42	.84	2.02
CHTE	0.5	T	3.28	1				
PERENNIAL FORBS	8.7	----	----	9	7.16	.79	.82	34.37
*PHHO	2.5	0.1	----	2				
PHAU	5.0	0.3	32.89	5				
ERCO	1.2	0.1	7.89	4				
LEAL	1.0	0.1	6.58	1				
PASE	0.5	T	3.28	1				
GISP	0.5	T	3.28	1				
ARHO2	0.5	T	3.28	1				
TOTAL		0.8	100.00		9.73			46.71

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #21 - Kane Deer Exc.

October 15 to April 15	= 4.32
April 15 to July 1	= 6.45
July 1 to September 1	= 3.70
September 1 to October 15	= 1.45
Season Total	= 15.92
Long Term Average	= 12.30

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Kane Deer Exclosure Outside-Spray 16 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*GUSA	2.0	0.1	----	1				
POSE	9.0	0.5	26.49	5	4.73	.95	.53	22.70
AGSP	7.0	0.4	20.55	6	11.53	1.92	1.65	55.34
ANNUAL FORBS	10.1	----	----	7	16.57	2.37	1.64	79.54
GIL	3.2	0.2	8.94	5				
SECA	3.0	0.2	8.38	1				
DEPI	0.3	T	T	3				
LATE	3.6	0.2	11.06	6				
PERENNIAL FORBS	9.7	----	----	10	23.34	2.33	2.41	112.03
MAC	0.3	T	T					
LEAL	1.5	0.1	4.19	3				
AST	2.0	0.1	5.59	1				
ERCO	3.0	0.2	8.38	1				
ARHO2	2.3	0.1	6.42	5				
TAOF	0.1	T	T	1				
ANDI	0.5	T	T	1				
TOTAL		2.0	100.00		56.17			269.62

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #21 - Kane Deer Exc.

October 15 to April 15	= 4.32
April 15 to July 1	= 6.45
July 1 to September 1	= 3.70
September 1 to October 15	= 1.45
Season Total	= 15.92
Long Term Average	= 12.30

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Farson Exclosure Inside Native 16 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	205.0	10.3	----	9				
CHVI	10.0	0.5	19.41	2	2.84	1.42	.28	13.63
ATCO	12.0	0.6	23.52	1	4.09	4.09	.34	19.63
SIHY	4.1	0.2	7.96	3	3.47	1.16	.85	16.66
AGSM	9.8	0.5	19.02	13	8.36	.64	.85	40.13
STCO	14.5	0.7	28.15	8	12.13	1.52	.84	58.22
POSE	1.0	0.1	1.94	1	.13	.13	.13	.62
ANNUAL FORBS	0.1	----	----	1	.03	.03	.30	.14
ERCE	0.1	T	T	1				
PERENNIAL FORBS	----	----	----	---				
*PHHO	17.0	0.9	----	3				
TOTAL		2.6	100.00		31.05			149.04

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARHO	21.3
ATCO	2.5
ARTR	180.8
PHHO	57.3
TOTAL	261.9

Precipitation Data:

R. G. #2 - Farson Exc.

October 15 to April 15	=	3.64
April 15 to July 1	=	2.43
July 1 to September 1	=	2.15
September 1 to October 15	=	0.49
Season Total	=	8.71
Long Term Average	=	6.50

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMTICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Farson Exclosure Outside Native 16 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	339.5	17.0	----	16				
CHVI	34.0	1.7	60.72	4	11.20	2.80	.33	53.76
AGSM	13.3	0.7	25.00	17	16.72	.98	1.26	80.26
SIHY	3.5	0.2	7.14	4	2.93	.73	.84	14.06
ORHY	1.0	0.1	3.57	2	1.99	.99	1.99	9.55
STCO	2.5	0.1	3.57	2	1.60	.80	.64	7.68
ANNUAL FORBS	0.1	----	----	1	.46	.46	4.60	2.21
ERCE	0.1	T	T	1				
PERENNIAL FORBS	----	----	----	---				
*PHHO	24.6	1.2	----	7				
TOTAL		2.8	100.00		34.90			167.52

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Plants

ARHO	25.9
ARTR	220.9
PHHO	42.5
OPPO	0.5
TOTAL	289.8

Precipitation Data:

R. G. #2 - Farson Exc.		
October 15 to April 15	=	3.64
April 15 to July 1	=	2.43
July 1 to September 1	=	2.15
September 1 to October 15	=	0.49
Season Total	=	8.71
Long Term Average	=	6.50

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #1 Exclosure Inside-Native 20 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
CHVI	154.0	7.7	61.86	9	20.81	2.31	.14	99.89
*SAVE	110.0	5.5	----	4				
*ARTR	102.0	5.1	----	3				
ATNU	39.0	1.9	15.64	3	13.68	4.56	.35	65.66
POSE	31.5	1.6	12.64	9	14.64	1.63	.46	70.27
AGSM	20.9	1.0	8.38	18	30.56	1.69	1.46	146.69
ORHY	2.0	0.1	.80	1	2.92	2.92	1.46	14.02
ANNUAL FORBS	1.9	----	----	9	3.71	.41	1.95	17.81
DEPI	0.2	T	T	2				
GIPU	1.7	0.1	.68	9				
TOTAL		12.4	100.00		86.32			414.34

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

SAVE	181.4
ARTR	56.2
TESP	10.8
TOTAL	248.4

Precipitation Data:
R. G. #31 - Cumberland #1 Exc.

October 15 to April 15	=	3.61
April 15 to July 1	=	2.23
July 1 to September 1	=	2.02
September 1 to October 15	=	0.54
Season Total	=	8.40
Long Term Average	=	8.93

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined By Area Estimate

Cumberland #1 Exclosure Inside-Spray 20 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
CHVI	37.0	1.9	35.19	4	7.38	1.85	.19	35.42
AGSM	14.6	0.7	12.96	17	27.82	1.64	1.91	133.54
POSE	45.5	2.3	44.45	11	34.82	3.16	.76	167.14
SIHY	2.0	0.1	1.85	1	1.69	1.69	.85	8.11
ANNUAL FORBS	5.6	----	----	17	24.80	1.46	4.43	119.04
LARE	0.9	0.1	1.85	5				
DEPI	4.1	0.2	3.70	14				
GIPU	0.6	T	T	6				
PERENNIAL FORBS	----	----	----	---				
*PHHO	1.0	0.1	----	1				
TOTAL		5.3	100.00		96.51			463.25

*Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #31 - Cumberland #1 Exc.

October 15 to April 15	=	3.61
April 15 to July 1	=	2.23
July 1 to September 1	=	2.02
September 1 to October 15	=	0.54
Season Total	=	8.40
Long Term Average	=	8.93

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #1 Exclosure Outside–Native 20 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	169.0	8.5	----	8				
CHVI	17.5	0.9	28.54	3	3.22	1.07	.18	15.46
*SAVE	125.0	6.3	----	4				
ATNU	17.0	0.9	25.52	5	7.13	1.43	.42	34.22
ORHY	1.0	0.1	1.50	1	.56	.56	.56	2.69
AGSM	13.8	0.7	20.72	14	17.06	1.22	1.24	81.89
POSE	10.6	0.5	15.91	10	5.79	.58	.55	27.79
SIHY	5.2	0.3	7.81	7	4.18	.59	.80	20.06
ANNUAL FORBS	1.5	----	----	5	1.31	.26	.87	6.29
GIPU	0.3	T	T	3				
DEPI	0.7	T	T	3				
CHAL	0.5	T	T	1				
TOTAL		3.4	100.00		39.25			188.40

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

SAVE	74.4
ARTR	76.6
TESP	10.1
TOTAL	161.1

Precipitation Data:

R. G. #31 - Cumberland #1 Exc.

October 15 to April 15	= 3.61
April 15 to July 1	= 2.23
July 1 to September 1	= 2.02
September 1 to October 15	= 0.54
Season Total	= 8.40
Long Term Average	= 8.93

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #1 Exclosure Outside-Spray 20 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
CHVI	6.0	0.3	5.17	2	1.61	.81	.27	7.73
AGSM	13.4	0.7	12.07	15	16.62	1.11	1.24	79.77
POSE	87.0	4.4	75.88	13	12.93	.99	.15	62.06
SIHY	2.5	0.1	1.72	2	1.70	.85	.68	8.16
ORHY	2.0	0.1	1.72	1	1.22	1.22	.61	5.86
ANNUAL FORBS	2.9	----	----	15	8.41	.56	2.90	40.37
CHAL	1.0	0.1	1.72	6				
DEPI	0.8	T	T	8				
LARE	0.2	T	T	2				
GIPU	0.9	0.1	1.72	5				
TOTAL		5.8	100.00		42.09			203.95

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #31 - Cumberland #1 Exc.

October 15 to April 15	=	3.61
April 15 to July 1	=	2.23
July 1 to September 1	=	2.02
September 1 to October 15	=	0.54
Season Total	=	8.40
Long Term Average	=	8.93

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #4 Exclosure Inside Native 20 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
ATNU	40.0	2.0	32.73	3	8.96	2.98	.22	43.01
EULA	75.1	3.8	60.22	17	30.87	1.82	.41	148.18
ARSP	1.0	0.1	.80	1	.32	.32	.32	1.54
AGSM	5.8	0.3	4.65	15	9.46	.63	1.63	45.41
ORHY	2.0	0.1	1.60	1	1.25	1.25	.63	6.00
ANNUAL FORBS	0.8	----	----	4	1.49	.37	1.86	7.15
DEPI	0.8	T	T	4				
PERENNIAL FORBS	----	----	----	---				
*PHHO	158.0	7.9	----	17				
TOTAL		6.3	100.00		52.35			251.29

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #34 - Cumberland #4

October 15 to April 15	= 3.50
April 15 to July 1	= 2.64
July 1 to September 1	= 2.76
September 1 to October 15	= 0.58
Season Total	= 9.48
Long Term Average	= 8.34

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #4 Exclosure Outside Native 20 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
ATNU	8.0	0.4	10.25	3	4.78	1.59	.59	22.94
ARSP	34.0	1.7	42.98	4	2.59	.65	.07	12.43
EULA	23.6	1.2	29.83	8	11.30	1.41	.48	54.24
AGSM	13.4	0.7	16.94	18	18.30	1.02	1.36	87.84
ANNUAL FORBS	0.1	----	----	1	.09	.09	.90	.43
CHAL	0.1	T	T	1				
PERENNIAL FORBS	----	----	----	---				
*PHHO	203.0	10.2	----	17				
TOTAL		4.0	100.00		37.06			177.88

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #34 - Cumberland #4

October 15 to April 15	=	3.50
April 15 to July 1	=	2.64
July 1 to September 1	=	2.76
September 1 to October 15	=	0.58
Season Total	=	9.48
Long Term Average	=	8.34

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #2 Exclosure Inside- Native 1 Sept.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARAR	95.0	4.8	-----	8				
CHVI	43.5	2.2	29.52	14	14.20	1.01	.33	68.16
*TECA	2.0	0.1	----	1				
AGSM	19.6	1.0	12.33	19	65.41	3.44	3.34	313.97
POAM	12.0	0.6	7.55	6	17.88	2.98	1.49	85.82
POSE	24.5	1.2	15.42	13	18.91	1.45	.77	90.77
ANNUAL FORBS	0.5	----	----	1	.50	.50	1.00	2.40
LIN	0.5	T	T	1				
PERENNIAL FORBS	57.0	----	----	12	11.45	.95	.20	54.96
SEN	0.1	T	T	1				
PHLO	33.0	1.7	20.77	4				
LEPU	6.0	0.3	3.77	2				
AST	0.5	T	T	1				
ERI	0.5	T	T	1				
ERI2	16.7	0.8	10.51	9				
VIO	2.0	0.1	.13	1				
TOTAL		7.9	100.00		128.35			616.08

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARAR	159.2
ARTR	3.3
PHMU	20.8
LEPU	26.6
TECA	4.3
PHHO	0.5
SYOC	T
TOTAL	214.7

Precipitation Data:
R. G. #32 - Cumberland #2 Exc.

October 15 to April 15	= NR
April 15 to July 1	= 8.70
July 1 to September 1	= 2.10
September 1 to October 15	= 1.26
Season Total	= 12.06
Long Term Average	= 9.18

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #2 Exclosure Inside-Spray 1 Sept.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
CHVI	2.0	0.1	2.86	1	2.07	2.07	1.04	9.94
AGSM	34.0	1.7	48.58	19	92.36	4.86	2.72	443.33
POSE	5.0	0.3	8.57	4	5.70	1.43	1.14	27.36
KOCR	4.0	0.2	5.71	1	8.37	8.37	2.09	40.18
STCO	0.5	T	----	1	1.12	1.12	2.24	5.38
POAM	18.2	0.9	25.71	10	32.91	3.29	1.81	157.97
ANNUAL FORBS	0.8	----	----	4	1.90	.47	2.37	9.12
LIN	0.8	T	T	4				
PERENNIAL FORBS	6.2	----	----	5	1.21	.24	.19	5.81
PHLO	0.1	T	T	1				
TRI	0.1	T	T	1				
ERI2	5.5	0.3	8.57	2				
AST	0.5	T	T	1				
TOTAL		3.5	100.00		145.64			699.09

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #32 - Cumberland #2 Exc.

October 15 to April 15	=	NR
April 15 to July 1	=	8.70
July 1 to September 1	=	2.10
September 1 to October 15	=	1.26
Season Total	=	12.06
Long Term Average	=	9.18

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #2 Exclosure Outside-Native 1 Sept.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARAR	235.0	11.8	----	12				
CHVI	27.0	1.4	29.75	5	8.0	1.60	.29	38.40
*TECA	2.0	0.1	----	1				
POSE	12.6	0.6	13.83	7	3.93	.56	.31	18.86
POAM	13.5	0.7	14.37	8	10.81	1.35	.80	51.89
AGSM	4.6	0.2	4.90	17	12.67	.75	2.75	60.82
ANNUAL FORBS	0.1	----	----	1	.13	.13	1.30	.62
LYE	0.1	T	T	1				
PERENNIAL FORBS	36.1	----	----	14	13.17	.94	.36	63.22
TRI	0.7	T	T	3				
PHLO	1.2	0.1	1.28	3				
ERI2	20.6	1.0	21.93	11				
ERPU	1.1	0.1	1.17	2				
*PHMU	44.5	2.2	----	8				
LEPU	11.0	0.6	11.71	3				
COPA	0.5	T	T	1				
AST	1.0	0.1	1.06	1				
TOTAL		4.8	100.00		48.71			233.81**

*Not computed in percent composition

T - Trace

**Reflects approximate utilization of 60% at time of clipping (corrected to 321.52 lbs.)

Production Estimates of Shrubs and Woody Mat Form Plants

ARAR	145.5
PHMU	2.6
TECA	3.0
SYOC	0.4
PHLO	0.3
TOTAL	151.9

Precipition Data:

R. G. #32 - Cumberland #2 Exc.

October 15 to April 15	= NR
April 15 to July 1	= 8.70
July 1 to September 1	= 2.10
September 1 to October 15	= 1.26
Season Total	= 12.06
Long Term Average	= 9.18

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #2 Exclosure Outside-Spray 1 Sept.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARAR	0.1	T	-----	1				
CHVI	28.5	1.4	29.11	4	4.27	1.07	.15	20.49
*TECA	2.0	0.1	-----	2				
AGSM	27.5	1.4	29.11	19	19.71	1.04	.72	94.61
POAM	36.7	1.8	37.48	15	9.66	.64	.26	46.37
ANNUAL FORBS	1.3	----	----	3	.18	.06	.14	.86
LIN	1.2	0.1	1.23	4				
DEPI	0.1	T	T	1				
PERENNIAL FORBS	3.9	----	----	6	1.31	.22	.34	6.29
PHLO	0.2	T	T	2				
TRI	0.2	T	T	2				
ERI2	3.0	0.2	3.07	2				
AST	0.5	T	T	1				
TOTAL		4.9	100.00		35.13			168.62**

*Not computed in percent composition

T - Trace

**Reflects approximate utilization of 85% at time of clipping (corrected to 967.50 lbs.)

Precipitation Data:
R. G. #32 - Cumberland #2 Exc.

October 15 to April 15	= NR
April 15 to July 1	= 8.70
July 1 to September 1	= 2.10
September 1 to October 15	= 1.26
Season Total	= 12.06
Long Term Average	= 9.18

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #3 Exclosure Inside-Native 21 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
*ARTR	369.0	18.5	----	13				
*SYOC	36.0	1.8	----	4				
CHVI	39.0	2.0	29.56	11	15.05	1.37	.38	72.24
POSE	28.0	1.4	21.69	10	15.89	1.59	.57	76.27
POFE	44.0	2.2	33.36	10	50.91	5.09	1.16	244.37
AGSM	13.8	0.7	10.46	15	26.09	1.74	1.89	125.23
AGSP	1.6	0.1	1.21	3	4.91	1.64	3.07	23.57
SIHY	0.6	T	T	2	1.76	.88	2.93	8.45
PERENNIAL FORBS	5.2	----	----	16	13.80	.86	2.65	66.24
TRI	0.3	T	T	3				
PHLO	2.9	0.1	2.20	13				
*PHHO	3.0	0.2	----	1				
*PHL	36.1	1.8	----	7				
AST	2.0	0.1	1.52	1				
TOTAL		6.6	100.00		128.41			616.37

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	352.1
PHHO	10.4
PHLO	4.8
SYOC	0.2
TOTAL	367.5

Precipitation Data:

R. G. #33 - Cumberland #3 Exc.

October 15 to April 15	= 4.97
April 15 to July 1	= 4.30
July 1 to September 1	= 2.34
September 1 to October 15	= 0.35
Season Total	= 11.96
Long Term Average	= 10.76

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #3 Exclosure Inside-Spray 21 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Compo-sition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occur-rences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
	A	B	C	E	F	G	H	I
POSE	4.0	0.2	3.85	2	2.51	1.25	.63	12.05
POFE	32.0	1.6	30.77	6	74.74	12.46	2.33	358.75
AGSM	24.0	1.2	23.08	13	49.93	3.84	2.08	239.66
AGSP	39.0	2.0	38.45	9	88.26	9.81	2.26	423.65
PERENNIAL FORBS	3.7	----	----	16	10.20	.64	2.76	48.96
PHLO	3.0	0.2	3.85	14				
TRI	0.5	T	T	1				
AST	0.1	T	T	1				
ARA	0.1	T	T	1				
TOTAL		5.2	100.00		225.64			1083.07

*Not computed in percent composition

T - Trace

Precipitation Data:
R. G. #33 - Cumberland #3 Exc.

October 15 to April 15	= 4.97
April 15 to July 1	= 4.30
July 1 to September 1	= 2.34
September 1 to October 15	= 0.35
Season Total	= 11.96
Long Term Average	= 10.76

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plot Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #3 Exclosure Outside-Native 21 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
*ARTR	486.0	24.3	----	13				
CHVI	37.5	1.9	38.76	9	9.72	1.08	.26	46.66
*SYOC	11.0	0.6	----	4				
STCO	6.0	0.3	6.13	3	3.57	1.19	.59	17.14
AGSP	1.6	0.1	1.64	3	2.28	.76	1.43	10.94
AGSM	11.6	0.6	11.86	19	20.31	1.07	1.75	97.49
POSE	31.6	1.6	32.31	15	10.93	.73	.35	52.46
POFE	4.0	0.2	4.09	2	6.76	3.38	1.69	32.45
PERENNIAL FORBS	5.5	----	----	18	8.91	.49	1.62	42.77
PHLO	5.1	0.3	5.21	18				
TRI	0.1	T	T	1				
*PHHO	19.0	1.0	----	5				
AST	0.2	T	T	2				
ARA	0.1	T	T	1				
TOTAL		5.0	100.00		62.48			299.91

*Not computed in percent composition

T - Trace

Production Estimates of Shrubs and Woody Mat Form Plants

ARTR	321.3
PHHO	34.8
PHLO	13.8
TECA	4.3
SYOC	0.1
TOTAL	374.3

Precipitation Data:

R. G. #33 - Cumberland #3 Exc.

October 15 to April 15	= 4.97
April 15 to July 1	= 4.30
July 1 to September 1	= 2.34
September 1 to October 15	= 0.35
Season Total	= 11.96
Long Term Average	= 10.76

HERBAGE AND PRECIPITATION DATA FROM WYOMING HALOGETON EXCLOSURE STUDIES
(PLOTS LOCATED SYSTEMATICALLY AND WEIGHTS ON OVEN DRY BASIS)

Plots Size 1 x 1 — No. Plots 20

Cover Determined by Area Estimate

Cumberland #3 Exclosure Outside-Spray 21 Aug.'68	Total Trans. Basal Area Percent	Average Percent Basal Area	Percent Composition	Absolute Plot Frequency % Base 20	Total Weight Gms/20/ Sq. ft.	Average Weight Per Plot Occurrences F ÷ E	Wgt./ Unit Basal Area F ÷ E	Pounds Per Acre F x 4.8
*ARTR	4.6	0.2	----	4				
CHVI	3.0	0.2	3.32	2	2.38	1.19	.79	11.42
*SYOC	8.0	0.4	----	1				
AGSM	26.5	1.3	30.47	14	66.84	4.77	2.52	320.83
POSE	30.1	1.5	33.33	15	10.69	.71	.35	51.31
POFE	8.0	0.4	8.86	4	9.58	2.39	1.19	45.98
AGSP	14.5	0.7	16.05	5	34.53	6.91	2.38	165.74
SIHY	1.0	0.1	1.11	1	1.58	1.58	1.58	7.58
PERENNIAL FORBS	7.2	----	----	16	5.71	.36	.79	27.41
PHLO	4.7	0.2	5.20	15				
TRI	0.5	T	T	5				
ASPU	0.5	T	T	1				
AST	1.5	0.1	1.66	3				
*PHHO	10.0	0.5	----	1				
TOTAL		4.5	100.00		131.31			630.27

*Not computed in percent composition

T - Trace

Precipitation Data:

R. G. #33 - Cumberland #3 Exc.	
October 15 to April 15	= 4.97
April 15 to July 1	= 4.30
July 1 to September 1	= 2.34
September 1 to October 15	= 0.35
Season Total	= 11.96
Long Term Average	= 10.76